1. What is the ratio of electron's charge to its mass?

a. 9.58 x 10^7 coul/kg

b. infinite

c. 0

d. 1.759 x 10^11 coul/kg

2. "What composes all matter whether a liquid, solid or gas?"

a. Atoms

b. Electrons

c. Protons

d. Neutrons

3. What is the smallest element of a matter?

a. neutron

b. electron

c. proton

d. atom

4. The lightest kind of atom of element

a. Titanium

b. Helium

c. Hydrogen

d. Oxygen

5. Which of the following is not a basic part of an atom?

a. Coulomb

b. Proton

c. Neutron

d. Electron

6. Electric charge of neutron is the same as

a. proton

b. atom

c. electron

d. current

7. The definite discrete amount of energy required to move an electron from a lower shell to a higher shell

a. quanta

b. negative energy

c. quantum

d. positive energy

8. What will happen to an atom if an electron is either taken out or taken into the same atom?

a. becomes negative ion

b. becomes an ion

c. becomes positive ion

d. nothing will happen

9. Ion is _____?

a. nucleus without protons

b. an atom with unbalanced charges

c. proton

d. free electron

10. A process of constant loses of free electrons and then regaining them is called _____.

a. electron gaining

b. induction

c. polarization

d. ionization

11. _____ is the procedure by which an atom is given a net charge by adding or taking away electron

a. Doping

b. Polarization

c. Ionization

d. Irradiation

12. "In electricity, positive charge refers to _____"

a. Atoms

b. Electrons

c. Protons

d. Neutrons

13. "When an atom gains an additional _____, it results to a negative ion"

a. atom

b. neutron

c. electron

d. proton

14. Protons are about _____ heavier than electrons

a. 1800 times

b. twice

c. less than thrice

d. less

15. Find the charge in coulombs of the dielectric that has a positive charge of 14.5 x 10 to the 18th power protons

a. 29 x 10 to the 16th coulombs

b. 29 x 10 to the 18th coulombs

c. 14.5 x 10 to the 16th coulombs

d. 14.5 x 10 to the 18th coulombs

16. Amount of additional energy required for electronic emission of metals

a. electronvolt

b. work function

c. band gap

d. MeV

17. It is the energy of the highest energy electron of a metal at 0 degree Kelvin

a. 1 eV

b. work function

c. 1 joule

d. Fermi characteristic energy

18. Which of the following constants is needed to calculate the wavelength of and electron when is treated as a wave?

a. Boltzmann's constant

b. Planck's constant

c. acceleration due to gravity

d. Faraday's constant

19. What is the atomic number of copper?

a. 1

b. 14

c. 27

d. 29

20. Which of the following is the heaviest?

a. electron

b. deuterium

c. protium

d. tritium

21. How many neutrons does Uranium 238 have?

a. 146

b. 148

c. 147

d. 149

22. Which if the following is NOT an internal digital IC fault?

a. open signal lines

b. shorted signal lines

c. faulty power supply

d. poor solder connections

23. This type of fault has the same effect as an internal short between IC pins.

a. open signal lines

b. shorted signal lines

c. broken wire

d. poor solder connection

24. Which of the following does not describe a flip-flop circuit?

a. latch

b. memory

c. bistable multivibrator

d. ROM

25. What is the normal resting state of the SET and CLEAR inputs in a NAND gate latch?

a. SET = CLEAR = 1

b. SET = 0, CLEAR = 1

c. SET = 1, CLEAR = 0

d. SET = CLEAR = 0

26. Add the hex numbers 58 and 24.

a. 7C

b. 7D

c. C7

d. 2C

27. Add 3AF to 23C.

a. BE5

b. 5EB

c. A3B

d. 101A

28. How many inputs does a full adder have?

a. 2

b. 4

c. 8

d. 3

29. How many inputs does a half adder have?

a. 1

b. 2

c. 3

d. 4

30. A computer programming language in which groups of 1s and 0s are used to represent instructions. It is also the only language a computer actually understood.

a. application software

b. machine language

c. high-level language

d. programming language

31. A digital circuit that produces an output code depending on which of its inputs is activated.

a. decoder

b. encoder

c. multiplexer

d. demultiplexer

32. A result which is obtained when a one is added to the least significant bit position of a binary number in the 1's complement.

a. spike

b. 2's complement form

c. complement

d. signed binary numbers

33. A binary counter that counts from 0000 to 1001 before it recycles.

a. buffer

b. BCD counter

c. ring counter

d. ripple counter

34. A shift register in which the output of the last flip-flop is connected to the input of the first flip-flop.

a. ring counter

b. ripple counter

c. parallel counter

d. BCD counter

35. A term synonymous with CLEAR in computer systems.

a. reset

b. set

c. toggle

d. load

36. That part of a computer instruction that defines what type of operation the computer is to execute on a specified data.

a. machine language

b. mnemonic

c. assembly language

d. Op code

37. An abbreviation that represents the op code of a computer instruction.

a. ASCII

b. Mnemonic

c. Octets

d. Instruction

38. A property whereby the output of a digital-to-analog converter either increases or stays the same as the input is increased.

a. Volatility

b. Immunity

c. Monotonicity

d. Parity

39. Class of mass memory devices that uses a laser beam to write and read onto a specified coated disk.

a. mass storage

b. RAM

c. optical disk memory

d. non-volatile memory

40. A term used to describe the logic function created when open-collector outputs are tied together.

a. Wire-OR

b. Wired-AND

c. totem-pole

d. tristate

41. A technique often used to eliminate decoding spikes.

a. wired-AND

b. strobing

c. tristate

d. wired-NAND

42. A momentary, narrow, spurious and sharply defined change in volume.

a. glitch

b. strobe

c. toggle

d. clock

43. A single bit comparator is usually implemented using

a. exclusive OR

b. NOR gate

c. exclusive NOR

d. wire AND

44. An equivalent boolean equation for an exclusive NOR is

a. xy + x'y'

b. xy + xy'

c. x'y +xy'

d. xy' + x'y'

45. Data storage in a memory is termed as

a. writing

b. memorizing

c. loading

d. reading

46. Data retrieval from a memory is termed as

a. writing

b. memorizing

c. loading

d. reading

47. In BCD, the code 1111 is

a. letter F

b. A

c. 11

d. invalid

48. A decoder with 4 inputs can have a maximum of how many outputs?

a. 4

b. 8

c. 16

d. 32

49. Another name for a digital multiplexer is

a. data selector

b. compressor

c. encoder

d. decoder

50. An astable multivibrator has

a. one stable state

b. two stable states

c. no stable state

d. tristate

51. A bistate multivibrator has

a. one stable state

b. two stable states

c. no stable state

d. tristate

52. A monostable multivibrator has

a. one stable state

b. two stable states

c. no stable state

d. tristate

53. A type of multivibrator circuit which generates a square wave of its own is the

a. astable

b. monostable

c. bistable

d. flip-flop

54. A situation when a circuit's output level for a given set of input conditions can be assigned as either a 1 or a 0.

a. don't care

b. totem pole

c. low level

d. high level

55. Circuits made up of combination of logic gates, with no feedback from outputs to inputs.

a. Latch

b. Sequential logic circuit

c. Combinational logic circuit

d. memory

56. A digital circuit that takes 4-bit BCD inputs and activates the required outputs to display the equivalent decimal digit on a 7-segment display.

a. BCD-to-decimal decoder

b. BCD-to-7 segment driver

c. decimal to BCD driver

d. 7-segment display

57. Asynchronous flip-flop line used to clear Q immediately to 0.

a. DC set

b. DC clear

c. DC reset

d. DC toggle

58. A counter that counts from a maximum count downward to zero.

a. synchronous counter

b. down counter

c. up counter

d. up/down counter

59. Small circles on the input or output lines of logic circuit symbols which represent inversion of a particular signal.

a. bootstrap

b. bubble

c. strobe

d. code

60. A multiplexer is described by its size through _____, where n = number of bits.

a. n x 2^n

b. 1 x 2^n

c. 2^n x 1

d. 2^n x m

61. Which of the following is NOT an advantage of state tables in sequential logic circuit design?

a. they are the systematic approach to a design problem

b. the number of variables is limited

c. they minimize the gating required

d. they result in synchronous circuit

62. A situation in a system where it can never leave or progress to another state.

a. rest

b. hang-up state

c. no change in state

d. toggle

63. A diagram consisting of a set of circles, where each circle contains a number of state within it.

a. state table

b. transition diagram

c. Karnaugh map

d. bubble diagram

64. A counter that counts sequentially but does not step through all possible states, it returns to zero after a particular state.

a. ripple counter

b. decade counter

c. truncated counter

d. binary counter

65. A circuit that produces an output pulse for a fixed period of time in response to a trigger and then returns to its quiescent state.

a. monostable circuit

b. astable circuit

c. bistable circuit

d. discriminator

66. A small change made in resistance or capacitance to time a circuit precisely.

a. trigger

b. tweaking

c. bounce

d. squeaking

67. A square wave oscillator or clock generator.

a. astable circuit

b. monostable circuit

c. bistable circuit

d. debouncing circuit

68. A circuit designed to produce a clean output in response to a switch closure.

a. monostable circuit

b. filter circuit

c. attenuator

d. debouncing circuit

69. Duty cycle for repetitive waveform is defined as

a. the ratio of the ON time to the total time

b. the sum of the ON time and the OFF time

c. the ratio of the OFF time to the ON time

d. the ratio of the total time to the ON time

70. The state of a flip-flop when Q = 0 and Q' = 1.

a. reset

b. set

c. trigger state

d. tristate

71. The state of a flip-flop when Q = 1 and Q' = 0.

a. reset

b. latch

c. set

d. glitch

72. A state causing the flip-flop to change or reverse its state.

a. reset

b. set

c. toggle

d. non-toggle

73. How many flip-flops should be used to realize 32-count capacity?

a. 2

b. 4

c. 5

d. 6

74. The time difference which results when a clock may not arrive at all flip-flops precisely at the same time.

a. glitch

b. spike

c. hold

d. clock skew

75. A _____ condition that exists if a circuit output depends on which of two nearly simultaneous inputs arrive at a point in the circuit first.

a. glitch

b. skew

c. clear

d. race

76. A one-input JK flip-flop is the _____ flip-flop.

a. D

b. T

c. S-R

d. C

77. A JK flip-flop can be made to function like a T flip-flop by simply

a. connecting the J and K inputs together as one-input

b. connecting J = 0 and K = 0

c. resetting all inputs of the JK

d. connecting earth ground the JK inputs

78. The one-input RS flip-flop is the _____ flip-flop.

a. T

b. D

c. R

d. Latch

79. Which of the following does not describe a flip-flop?

a. it is a one-bit memory device

b. its interval circuitry are usually symmetrical

c. it is a bistable device

d. it is equivalent to a one-short circuit

80. In clock circuits, SWG means

a. square wave glitches

b. standard wire gauge

c. square wave generators

d. standard wave ground

81. An input signal that can activate or disable a gate.

a. strobe

b. glitch

c. tristate

d. wired-AND

82. A ring counter where the output is inverted and tied back to the input.

a. shift counter

b. decade counter

c. BCD counter

d. Johnson counter

83. A circuit that goes through 2^(n-1) states in a random fashion.

a. random generator

b. pseudo-random sequence generator

c. counting circuit

d. register

84. An input that disables multiplexers or demultiplexers when it is HIGH.

a. strobe

b. keyboard

c. decoder

d. binary input

85. Application of excessive current to a fuse in order to open it.

a. shorting

b. blowing

c. breaking

d. disconnecting

86. An outstanding advantage of LCDs from LEDs.

a. LCDs are organized as a 7-segment display for numerical read out

b. LCDs can be multiplexed

c. LCDs essentially act as a capacitor and consume almost no power

d. LCDs generates light

87. A computer language that enables Programmable Array Logic (PAL) users to generate a file that can be used to blow a PAL.

a. JEDEC

b. PALASM

c. Turbo C++

d. Visual C

88. A type of computer bus which is bidirectional.

a. data bus

b. address

c. control bus

d. calling bus

89. A table used by a PLD language, such as PALASM, to calculate the expected outputs for a set of inputs.

a. excitation table

b. state table

c. simulation table

d. truth table

90. A programmable block of logic within a gate array, that contains a flip-flop for storage and also allows the user to specify logic functions on its inputs.

a. programmed block

b. PLD

c. configurable logic block

d. block diagram

91. This type of bus carries the memory address from the computer to the memory.

a. data bus

b. address bus

c. control bus

d. parallel bus

92. This type of bus carries lines that control the operation of the memory from the microprocessor to the memory.

a. data bus

b. address bus

c. control bus

d. bus lines

93. A register which holds the address of the word currently being accessed.

a. hold register

b. memory address register

c. memory data register

d. access register

94. A register which holds the data being written into or read out of the addressed memory location.

a. hold register

b. memory data register

c. memory address register

d. glitch register

95. A preproduction model of a system built for testing and debugging.

a. wire list

b. maybe (colloquial)

c. prototype

d. sample

96. Correcting the faults in a circuit or system.

a. buzz-out

b. debugging

c. trap

d. fault corrector

97. There are _____ flip-flops for a 3-bit binary counter.

a. 2

b. 3

c. 4

d. 5

98. A sequential logic circuit where the storage elements commonly used are time-delay devices (usually gates).

a. Synchronous SLC

b. Asynchronous SLC

c. Counter

d. Register

99. A block added to the combinational logic circuit to form a sequential logic circuit is the

a. ROM

b. counter

c. clock

d. memory

100. The state of the flip-flop before the occurrence of clock pulse is called as its

a. present state

b. next state

c. current input

d. present output

101. The state of the flip-flop after the occurrence of a clock pulse is called as its

a. current state

b. present state

c. next state

d. current input

102. It is said to be a universal gate because any digital system can be implemented with it.

a. NAND

b. AND

c. OR

d. exclusive OR

103. A flip-flop which follows its input in the next state.

a. T

b. D

c. JK

d. RS

104. An n-bit binary parallel adder requires _____ in its least design.

a. n half adders

b. n half subtractor

c. n full adders

d. n half subtractors and n full adder

105. A magnitude comparator has 2^(2n) entries in the truth table where n

a. number of inputs

b. number of comparator bits

c. number of outputs

d. number of inputs and outputs

106. An included input terminal in a magnitude comparator IC which is significant when both inputs compared are equal is called as its

a. setting

b. cascading inputs

c. input terminals

d. address

107. In designing a 16 x 1 multiplexer, how many selection lines are needed?

a. 2

b. 4

c. 15

d. 32

108. If F = xy + x'y' boolean expression is to be implemented using decoders and OR gates, the connection involves

a. 2 to 4 line decoder with 3 OR gates

b. 3 to 8 line decoder with 2 OR gates

c. 2 to 4 line decoder with 1 OR gates

d. 3 to 8 line decoder with 4 OR gates

109. How many AND gates and 4-bit binary adders are needed to implement a 2-bit to 3-bit binary multiplier?

a. 15 AND gates and three 4-bit binary adders

b. 2 AND gates and one 4-bit binary adder

c. 9 AND gates only

d. 6 AND gates and one 4-bit binary adder

110. From a 3-bit binary counter design using T flip-flops, determine the number of T flip-flops needed in its circuit implementation.

a. 1

b. 2

c. 3

d. 4

111. A system coordinating I/O between the transmitting and receiving devices.

a. charging

b. handshaking

c. interfacing

d. polling

112. An area of memory that holds the ASCII characters that are being displayed on a monitor.

a. space

b. start bit

c. terminal

d. screen image

113. An IC that transforms parallel data to serial in the asynchronous format and vice versa.

a. UART

b. USART

c. MODEM

d. RS232C

114. An instruction that alters the normal course of a program by causing it to jump to another instruction.

a. rotate instruction

b. skip instruction

c. jump

d. ACC

115. An instruction that causes data to be brought from memory into an accumulator register.

a. LOAD

b. LOOP

c. FETCH

d. JUMP

116. The portion of an instruction cycle where the instruction is sent from memory to the instruction register.

a. LOAD

b. ACCUMULATE

c. FETCH

d. EXECUTE

117. An instruction that causes data in the accumulator to be moved to the memory or a peripheral register.

a. FETCH

b. STORE

c. LOOP

d. LOAD

118. This occurs when the result of an arithmetic operation is a more negative number than the output register can accommodate.

a. error

b. overflow

c. underflow

d. don't care

119. This occurs when the result of an arithmetic operation is a larger number than the output register can accommodate.

a. overflow

b. inflow

c. underflow

d. look-ahead carry

120. A representation of numbers when negative numbers are obtained by complementing their positive equivalent and adding 1.

a. 2's complement

b. inversion

c. signed numbers

d. indeterminate

121. Which of the following is the language used in making an internet web page?

a. highertext mark-up language

b. hypertext mark-up language

c. hightech mark-up language

d. hypertext make-up language

122. A program which can be executed on several different computers to compare their speed and performance.

a. compiler

b. assembler

c. diagnostic program

d. benchmark

123. A single word memory location used to temporarily hold data during program execution.

a. accumulator

b. register

c. buffer

d. stack

124. Refer to the debugging method in which the program is executed one instruction at a time and the register contents can be examined after each step?

a. text editing

b. syntax analyzing

c. trace

d. semantic tracing

125. In a computer system, it is a unit of hardware where the control keys are located.

a. CPU

b. keyboard

c. I/O section

d. console

126. If a certain circuit acts as an AND gate when used with positive logic (H=1, L=0), what function will it perform when used with negative logic (H=0, L=1).

a. OR

b. AND

c. NAND

d. NOR

127. TTL, DTL, and ECL, which are frequently used to refer to certain "families" of digital integrated circuits, are actually names of

a. alternatives to positive and negative logic

b. varieties of positive and negative logic

c. companies that originated the families

d. general varieties of electronic circuits used as logic gates, from which, in essence, the building blocks in each series are constructed

128. In the data sheet of a digital building block, operating speed is typically expressed in terms of

a. capacitance C

b. transition frequency

c. propagation delay times for both possible output transitions

d. miles per hour or centimeters per second

129. The fan out capability of a digital building block depends on the current capability of its output and the current requirement of each input driven by that output, and maybe defined as

a. the number of inputs that one output can transmit to

b. the number of other inputs that can transmit to one input

c. the maximum power dissipation that the unit can stand

d. the amount of cooling required

130. Noise margin, which is one indication of how likely is it that information communicated between digital building blocks will be incorrect due to noise, depends on

a. output current capabilities and input current requirements

b. output power and required input power for the two logic states

c. the "safety margin" between the output voltage produced by the transmitting block and input voltage

required by the receiving block for each of the two logic state

d. the "safety margin" between the noise level and the noise figure

131. Typical propagation delay range for modern digital integrated circuits is

a. 1 to 100 milliseconds

b. 1 to 100 microseconds

c. 1 to 100 nanoseconds

d. 1 to 100 picoseconds

132. The most commonly used IC package for digital integrated circuits is the

a. CMOS pack

b. DIP ceramic

c. DIP plastic

d. Flat pack

133. A multiwire connection between digital circuits is usually called a

a. ribbon

b. bus

c. wire wrap

d. multiplexed line

134. Which of the following is a form of De Morgan's theorem?

a. A + B = (AB)'

b. AB = (A + B)'

c. (A + B)' = A' . B'

d. A . B = A' . B'

135. "Limbo" state of a flip-flop occurs when

a. both outputs are low

b. both outputs are high

c. both outputs are the same

d. the outputs are inverse

136. A logic circuit that is triggered by a clock signal is

a. sequential

b. synchronous

c. asynchronous

d. pulsed

137. Another name for a decade counter

a. frequency divider

b. ripple shift counter

c. BCD counter

d. binary counter

138. Which of the items below can perform parallel-to-serial data conversion?

a. shift register

b. binary counter

c. multiplexer

d. decoder

139. Which of the following does not form DAC's?

a. counter

b. resistor network

c. current switches

d. reference

140. What digits are used in the binary number system?

a. 0 and 1

b. high and low

c. true and false

d. all of the choices

141. How does a CMOS integrated circuit respond to a floating input?

a. Unpredictable, may overheat and be destroyed

b. open

c. shorted

d. acts just like a logic 1

142. What will be the state of Q and Q' after a flip-flop has been reset?

a. Q = 0, Q' = 1

b. Q = 1, Q' = 0

c. Q = 0, Q' = 0

d. Q = 1, Q' = 1

143. All arithmetic operations take place in the _____ of a computer.

a. CPU

b. ALU

c. microprocessor

d. ROM

144. How many outputs does a full adder have?

a. 1

b. 2

c. 4

d. 8

145. What are the three basic parts of a BCD adder circuit?

a. two 4-bit adders and connection logic

b. two connection logic and one 4-bit adder

c. two full adders and one AND gate

d. one connection logic and 4 full adders

146. What is the principal register of an arithmetic logic unit?

a. controller

b. buffer

c. actuator

d. accumulator

147. An IC that contains a large number of interconnected logic functions wherein the user can program the IC for a specific function by selectively breaking the appropriate interconnections.

a. RAM

b. ROM

c. PLD

d. PLC

148. Class of programmable logic devices wherein its AND array is programmable while its OR array is hard-wired.

a. PAL

b. PLA

c. PLD

d. PROM53

149. Class of programmable logic devices wherein both its AND and its OR arrays are programmable.

a. Field Programmable Logic Array

b. Programmable Logic Controller

c. Programmable Logic Circuit

d. Programmable Array Logic

150. A digital circuit that oscillates between two unstable output states.

a. monostable multivibrator

b. astable multivibrator

c. bistable multivibrator

d. flip-flop

151. An electrical connection common to all segments of an LCD.

a. dual slope

b. bootstrap

c. backplane

d. cascade

152. How many bits are in a byte?

a. 8

b. 4

c. 2

d. 16

153. What binary number follows 1110?

a. 1010

b. 0111

c. 1111

d. 1000

154. What capital letter corresponds to 1000101 in the ASCII code?

a. A

b. C

c. D

d. E

155. What is the binary ASCII code for a question mark?

a. 0111110

b. 0111111

c. 0111000

d. 0100011

156. In the 7400 family of TTC devices, Quad 2-input NAND gates has a device number equal to

a. 7400

b. 7402

c. 7432

d. 7486

157. Quad 2-input XOR gates in the 7400 family of TTL devices has a device number equivalent to

a. 7402

b. 7486

c. 7408

d. 7404

158. A JK flip-flop will operate in the toggle mode when

a. J = 0, K = 0

b. J = 1, K = 0

c. J = 1, K = 1

d. J = 0, K = 1

159. A digital circuit test equipment which is a troubleshooting tool that generates a short-duration pulse when activated manually, usually by pressing a button is the _____.

a. logic probe

b. VOM

c. logic clip

d. logic pulser

160. An RS flip-flop will not change in state when

a. R = 0, S = 0

b. R = 1, S = 0

c. R = 0, S = 1

d. R = 1, S = 1

161. A T flip-flop can be derived by

a. connecting two inputs of the JK flip-flop together

b. by inverting the inputs of a JK flip-flop

c. connecting the RS flip-flop's input to ground

d. securing an integrated circuit with three inputs

162. The number of digits used by a number system.

a. base

b. radix

c. 2^n

d. n

163. What is the condition of the flip-flop when Q = 0 and Q' = 1?

a. reset

b. set

c. undetermined

d. preset

164. How many logic gates are in an SSI chip?

a. less than 12 gates

b. between 12 to 99 gates

c. anywhere from 100 to 9999 gates

d. 10,000 or more

165. How many logic gates are in an MSI chip?

a. less than 12 gates

b. between 12 to 99 gates

c. anywhere from 100 to 9999 gates

d. 10,000 or more

166. How many logic gates are in an VLSI chip?

a. less than 12 gates

b. between 12 to 99 gates

c. anywhere from 100 to 9999 gates

d. 10,000 or more

167. Which of the items below is not part of the hardware organization in a computer?

a. architecture

b. implementation

c. hardware realization

d. assembler

168. It consists of the instructions and data that the computer hardware manipulates to perform useful work.

a. software

b. program

c. file

d. data

169. The data manipulated by a program is called _____ depending on its nature and extent.

a. data base

b. file

c. input

d. all of the choices

170. The most primitive instructions that can be given to a computer are those interpreted directly by the hardware in _____ form.

a. assembly language

b. machine language

c. high-level language

d. simulator

171. It represents machine instructions by mnemonic names and allows memory addresses and other constants to be represented by symbols rather than bit strings.

a. assembler

b. machine language

c. assembly language

d. interpreter

172. It is needed to translate a high-level program into a sequence of machine instructions that performs the desired task.

a. assembler

b. interpreter

c. compiler

d. debugger

173. Text editors and formatters belong to the area of computing known as _____.

a. software

b. word processing

c. compilers

d. assemblers

174. The processor or central processing unit is

a. the heart of the computer

b. employed RISC

c. communicates with the user

d. supports floating point numbers

175. Processors with more than two registers for arithmetic and logical operations are classified as

a. specific register processors

b. general register processors

c. accumulator based

d. serial register processor

176. Which of the following is a non-volatile device?

a. ROM

b. RAM

c. PLA

d. PLD

177. With a _____ a processor can store data at any address and read back the stored information at any time

a. RAM

b. ROM

c. PLA

d. PROM

178. The system program used to translate directly an assembly language to machine language is called

a. assembler

b. compiler

c. text editor

d. debugger

179. A command to an ADC to start conversion.

a. SOC

b. EOC

c. PAC

d. EAR

180. Speeds of modems are generally classified by the number of _____ they can transmit.

a. cycles per second

b. bits per second

c. frequency per second

d. all of the choice

181. High speed modems transmit between

a. 300 and 2400 bps

b. 2400 and 9600 bps

c. between 2400 and 9600 bps

d. between 300 an d2400 bps

182. Low speed modems method of modulation is usually

a. phase-shift modulation

b. dibit modulation

c. frequency shift keying

d. amplitude modulation

183. Low speed modems generally handle data rates between

a. 3000 and 9000 bps

b. 300 and 2400 bps

c. 2400 and 9600 bps

d. 100 and 2400 bps

184. The most important memory element which is made of an assembly of logic gates is called

a. latch

b. bistable multivibrator

c. flip-flop

d. all of the choices

185. What is the normal resting state of the SET and CLEAR inputs in a flip-flop?

a. low, high

b. high, low

c. high, high

d. low, low

186. What will be the states of Q and Q' after a flip-flop has been cleared?

a. Q = 1, Q' = 0

b. Q = 0, Q' = 1

c. Q = 0, Q' = 0

d. Q = 1, Q' = 1

187. When power is first applied to any flip-flop circuit, it is impossible to predict the initial state of Q and Q'. What could be done to ensure that NAND latch always started off in the Q = 1 state?

a. apply momentary HIGH to PRESRT input

b. apply momentary LOW to SET input

c. apply momentary LOW to CLEAR input

d. apply momentary HIGH to CLEAR input

188. When a flip-flop is set, what are the states of Q and Q'?

a. Q = 1, Q' = 0

b. Q = 0, Q' = 1

c. Q = 0, Q' = 0

d. Q = 1, Q' = 1

189. Two types of inputs that clocked flip-flop has.

a. synchronous control inputs and clock input

b. asynchronous control inputs and clock input

c. pulsed control inputs and clock input

d. all of the choices

190. The flip-flop can change only when the appropriate clock transition occurs. It is a condition called

a. edge triggered

b. latching

c. clocking

d. pulsing

191. It is the required interval immediately following the active edge of the clock signal during which the control inputs must be held stable.

a. hold time

b. pulsing time

c. set up time

d. all the time

192. It is the required interval immediately following the active edge held of clocks during which the control inputs must be held.

a. set-up time

b. hold time

c. pulsing time

d. propagation time

193. What JK input condition will always set Q upon the occurrence of the active clock transition?

a. J = 0, K = 0

b. J = 1, K = 0

c. J = 0, K = 1

d. J = 1, K = 1

194. How does the operation of an asynchronous input differ from that of a synchronous input?

a. it works independently of the clock input

b. it is very dependent on the clock transition

c. it is mutually the same in function

d. not determined by ordinary operation

195. The triangle inside the rectangle which is part of the IEEE/ANSI symbology at clock input

a. indicates the function of those inputs that are common to more than one circuit on the chip

b. indicates triggering on a NGT

c. indicates edge-triggered operation

d. all of the choices

196. Which type of flip-flop is best suited for synchronous transfer because it required the fewest interconnections from one flip-flop to the other?

a. JK

b. T

c. R

d. D

197. The fastest method for transferring data from one register to another is the

a. serial transfer

b. parallel transfer

c. hybrid transfer

d. FIFO

198. What is the major advantage of serial transfer over parallel transfer?

a. large interconnections between gates

b. one at a time transmission

c. fewer interconnections between registers

d. speed

199. A 20KHz signal is applied to a JK flip-flop when J = 1, K = 1. What is the frequency of the flip-flop waveform?

a. 20 kHz

b. 10 kHz

c. 40 kHz

d. 5 kHz

200. How many flip-flops are required for counter that will count 0 to 255?

a. 2

b. 4

c. 16

d. 8

201. It converts a non-electrical physical quantity to an electrical quantity.

a. converter

b. inverter

c. transducer

d. compiler

202. What does a computer do with the data it receives from an ADC?

a. stores the data

b. performs calculation

c. processes the data

d. all of the choices

203. An actuator in the DAC performs

a. conversion of digital data to its analog representation

b. controls a physical variable according to an electrical input signal

c. converts a non-electrical physical quantity to an electrical quantity

d. performs calculation

204. The maximum deviation of DAC output from its ideal value, expressed as percentage of full scale.

a. full scale error

b. deviation ratio

c. percentage error

d. none of the choices

205. The time it takes for the DAC output to settle to within the 1/2 step size of its full scale value when the digital input changes from zero to full scale.

a. setting time

b. set-up time

c. hold time

d. full scale time

206. Why are voltage DAC's generally slower than current DAC's?

a. because of the response time of the op-amp current-to-voltage converter

b. because of its internal construction

c. because voltage DAC's have many heat losses

d. none of the choices

207. What is the function of the comparator in the ADC?

a. tells control logic when the DAC output exceeds the analog input

b. compares two parameters only

c. addition and multiplication

d. arithmetic operation

208. Meaning of checksum in ROM's

a. it is a code placed in the last one or two ROM locations that represents the sum of the expected ROM data from all other locations

b. used as a means to test for leakage in one or more ROM locations

c. prevents decoding glitches

d. regulates ROM

209. What is meant by interfacing in a computer system?

a. synchronization of data information in a computer

b. synchronization of digital information transmission between the computer and external I/O devices

c. connection of computers

d. finding the fault in a network

210. Which of the following below is not one of the three major sections of an MPU?

a. timing and control

b. ALU

c. register

d. inversion

211. What is an operand address?

a. the binary code that represents the operation to be performed by the CPU

b. the address of the data to be operated as the CPU executes the instruction called for by the opcode

c. a short abbreviation for the operation

d. all of the choices

212. What device puts data on the data bus during a write operation?

a. ALU

b. CPU

c. keyboard

d. accumulator

213. Instruction mnemonic means

a. a short abbreviation for the operation

b. a binary code that represents the operation to be performed by the CPU

c. technical term sometimes added to an IC's description

d. representation of a quantity that varies in discrete steps

214. Arrival of a clock signal at the clock inputs of different flip-flops at different times as a result of propagation delays.

a. clock transition

b. buffer address

c. clock skew

d. none of the choices

215. A logic circuit that depending on the status of its selected inputs will channel its data input to one of several data outputs.

a. MUX

b. DMUX

c. RAM

d. ROM

216. Add 74(8) with 1.1(2)

a. 700(10)

b. 70.5(8)

c. 10101.01(2)

d. 75.4(8)

217. An analog memory circuit used to eliminate aperture error is called a

a. MUX

b. DMUX

c. Track/store amplifier

d. flip-flop

218. Which of the following is not a dynamic test instrument?

a. logic probe

b. oscilloscope

c. logic analyzer

d. logic monitor

219. A translated program in machine language is called

a. a source program

b. an object program

c. machine program

d. user program

220. Performing binary subtraction to 6 1/4 minus 4 1/2 results to

a. 1001.01

b. 1.11

c. 10.11

d. 1.00

221. A circuit made up of combinations of logic gates, with no feedback from outputs to input.

a. sequential logic circuit

b. combinational logic circuit

c. clocked circuits

d. asynchronous logic circuit

222. Which of the following involves digital quantities?

a. Ten position switch

b. Current meter

c. Temperature

d. Radio volume control

223. Which of the following choices is NOT a characteristic of analog quantity

a. varied amplitude

b. one quantity is represented by another which is proportional to the first

c. is considered discrete

d. they can vary over a continuous range of values

224. The decimal system is composed of _____ numerals or symbols.

a. 2

b. 10

c. 8

d. 16

225. Change in state is

a. same state

b. reset

c. set

d. toggle

226. What is the decimal equivalent of (1101011)2?

a. 107

b. 108

c. 96

d. 100

227. What is the next binary number following (10111)2 in the counting sequence?

a. 11100

b. 110011

c. 10110

d. 11000

228. What is the largest decimal value that can be represented using 12 bits?

a. 144

b. 2048

c. 4095

d. 4096

229. What is the largest number that can be represented using 8 bits?

a. 11111111

b. 10111011

c. 10111111

d. 11011111

230. A digital circuit is also referred to as a/an _____ circuit.

a. arithmetic

b. logic

c. electrical

d. sequential

231. CMOS means

a. Complementary Main-Oxide Semiconductor

b. Complementary Metal-Oxide Semiconductor

c. Complements Main-Oxidation Semiconductor

d. Correlation in Metal Oxidized Semiconductor

232. What is the smallest type of semiconductor in terms of their physical size?

a. minicomputer

b. mainframe

c. maxicomputer

d. microcomputer

233. Equivalent of decimal value of 178 in straight binary code is _____ and in BCD is _____.

a. 11000, 11111111

b. 10111101, 100000

c. 10110010, 101111000

d. 111111, 1100000

234. If each digit of a decimal number is represented by its binary equivalent, the result is a code called

a. Morse code

b. binary system

c. binary-coded decimal

d. straight binary coding

235. Convert (614)8 to decimal.

a. 400

b. 384

c. 392

d. 396

236. BCD code has always _____ bits per number.

a. 2

b. 4

c. 8

d. 16

237. Convert (B2F)16 to octal.

a. 5547

b. 5457

c. 7547

d. 11010

238. Convert 1000 1001 0111 (BCD) to its decimal equivalent.

a. 798

b. 457

c. 897

d. 101

239. Which of the following items below is NOT one of the three basic operations in Boolean algebra?

a. logical addition

b. logical complementation

c. logical subtraction

d. logical multiplication

240. How many bits are required to represent an eight digit decimal number in BCD?

a. 256

b. 4

c. 255

d. 32

241. The _____ belongs to a class of codecs called the minimum-change codes, in which only one bit in the code group changes when going from one step to the next.

a. Morse code

b. BCD code

c. Excess-3 code

d. Gray code

242. The most widely used 7-bit alphanumeric code is the

a. ASCII

b. EBCDIC

c. straight binary code

d. Gray code

243. What is the hex equivalent of an ASCII code which means "HELP"?

a. 48 45 4C 50

b. 4C 50 51 52

c. 58 57 58 48

d. 48 45 50 50

244. A _____ takes the complete decimal number and represents it in binary.

a. BCD

b. gray code

c. excess-3 code

d. straight binary code

245. The number of input combinations will equal _____ for an N-input truth table.

a. 2^(N-1)

b. N

c. 2^N

d. N – 1

246. The _____ operation result will be 1 if any one or more variables is a 1.

a. NOT

b. AND

c. OR

d. NOR

247. A circuit that operates in such a way that its output is high when all its inputs are high.

a. or

b. nand

c. nor

d. and

248. What is the only input combination that will produce a high at the output of a five-input AND gate?

a. at least one low input

b. at least one high input

c. all inputs should be low

d. all inputs should be high

249. The output of an inverter is connected to the input of a second inverter. Determine the output level of the second inverter.

a. output level is the complement of the input level

b. output level is the same as the input level

c. high output is observed

d. undetermined state

250. Given: x = A'BC(A+D)'. Determine the output of the circuit x if A = 0, B = 1, C = 1, and D = 0.

a. 0

b. 1

c. 2

d. 10

251. With OR operation, 1 + 1 =

a. 1

b. 0

c. 10

d. 2

252. Use the expression for x = D + [(A+B)C]' . E to determine the output of the circuit for conditions A = B = E = 1, C = D = 0.

a. 0

b. 1

c. 2

d. 10

253. The boolean expression for a six-input OR gate.

a. A + B + C

b. A.B.C.D.E.F

c. A+B+C+D+E+F

d. U+V+W+X+Y+Z

254. What type of gate is equivalent to a NAND gate followed by an inverter?

a. OR

b. AND

c. XOR

d. NOR

255. Simplify the expression y = AB'D + AB'D'.

a. AB

b. D'

c. BCD

d. AB'

256. How many different ways can we implement the inversion operation in a logic circuit?

a. 1

b. 2

c. 3

d. 4

257. In boolean algebra, B.B' =

a. B

b. B'

c. 0

d. 1

258. In boolean algebra, G + GF =

a. GF

b. G

c. F

d. 1

259. In boolean algebra, X + 1 =

a. X + 1

b. X

c. 0

d. 1

260. A circuit with no memory characteristic, and so its output depends only on the current value of its inputs.

a. SLC

b. Boolean circuits

c. CLC

d. Multiplexers

261. Determine the sum-of-products expression for a circuit with four inputs and an output that is HIGH only when input A is low at the same time that exactly two inputs are low.

a. A'B'C'D + A'B'CD' + A'BC'D'

b. A'B'C' + C'D'

c. A'B'C' + A'C'D' + A'B'D'

d. 10

262. A graphical device used to convert a truth table to its corresponding logic circuit in a simple, orderly process.

a. Karnaugh map

b. state table

c. truth table

d. state diagram

263. What is the output of an EX-NOR gate when a logic signal and its exact inverse are connected to its input?

a. X'

b. X

c. 1

d. 0

264. One of the standard levels of complexity of integrated circuits which contains 100,000 and more number of gates.

a. SSI

b. MSI

c. VLSI

d. ULSI

265. What is the most common type of digital IC package?

a. DIP

b. Metal type

c. CMOS

d. TTL

266. An acceptable voltage range of a logic 0 for TTL.

a. 2 to 5 V

b. 0 to 0.8 V

c. 0 to 1.5 V

d. 3.5 to 5 V

267. An acceptable voltage range of a logic 1 for TTL.

a. 2 to 5 V

b. 0 to 0.8V

c. 0 to 1.5V

d. 3.5 to 5 V

268. An acceptable voltage range of a logic 0 for CMOS operating at Vdd = 5V.

a. 2 to 5 V

b. 0 to 0.8V

c. 0 to 1.5V

d. 3.5 to 5 V

269. An acceptable voltage range of a logic 1 for CMOS operating at Vdd = 5V.

a. 2 to 5 V

b. 0 to 0.8V

c. 0 to 1.5V

d. 3.5 to 5 V

270. What happens when the input to a digital IC is left unconnected for TTL IC's?

a. it acts like a logic 1

b. it becomes overheated

c. it acts just like a logic 0

d. it eventually destroys itself

271. An unconnected input is termed as _____.

a. open

b. close

c. disconnected

d. floating

272. Effects of capacitance

a. It opposes any change in the amount of voltage

b. Voltage is lagged behind the current by a quarter cycle

c. Electric energy is stored in the capacitor in the form of electrostatic field

d. All of the above

273. Points to be considered in choosing a capacitor.

a. working voltage

b. type of dielectric

c. capacitance

d. all of the above

274. Permeability is otherwise known as

a. magnetic conductivity

b. magnetic susceptibility

c. electric conductivity

d. electric susceptibility

275. The impedance in the study of electronics is represented by resistance and

a. inductance

b. capacitance

c. inductance and capacitance

d. reactance

276. Loop currents should be assumed to flow in which direction?

a. straight

b. clockwise

c. counter-clockwise

d. either b or c arbitrarily selected

277. What determines the direction of induced emf in a conductor or coil?

a. cork screw rule

b. Fleming's left hand rule

c. ampere's circuital law

d. Fleming's right hand rule

278. The reason why electrical appliances are connected in parallel.

a. It is a simple circuit

b. this makes the operation of appliances independent of each other

c. this results in reduced power consumption

d. all of the above

279. Which of the following does not affect resistance?

a. resistivity

b. cross-sectional area

c. mass

d. length

280. Which of the following is not considered a physical factor in affecting resistance?

a. length

b. material type

c. temperature

d. cross-sectional area

281. A 0.09 microfarad capacitor is charged to 220 volts. How long in milliseconds will it discharge to a level of 110 V if the discharged resistor has a resistance of 20 kohms?

a. 1.5

b. 2.5

c. 1.25

d. 0.5

282. A trigger circuit consisting of a capacitor of 0.01 uF is connected in series with a resistor. If the circuit requires 100 Vdc to operate, determine the value of the resistor when time constant is 0.009 s.

a. 900 ohms

b. 900 kohms

c. 900 Mohms

d. 900 Gohms

283. The graph between an alternating quantity and time is called

a. sinewave

b. curve

c. waveform

d. a plot

284. Which of the following is the most popular waveform?

a. sinusoidal

b. square wave

c. triangular

d. sawtooth

285. Which of the following does not refer to electrical energy?

a. volt-ampere

b. joule

c. watt-second

d. volt-coulomb

286. What is the resonant frequency of a circuit when L of 25 microhenrys and C of 10 picofarads are in parallel?

a. 10.1 kHz

b. 10.1 MHz

c. 101 MHz

d. 101 kHz

287. An ideal current source has an internal conductance of _____ siemen/s.

a. infinite

b. one

c. zero

d. one million

288. A capacitance of 6 uuF means

a. 6 pF

b. 6 nF

c. 6 fF

d. 6 aF

289. The voltage cannot be exactly in phase with the current in a circuit that contains

a. only capacitance

b. only resistance

c. inductance and capacitance

d. inductance, capacitance, and resistance

290. The charge in the capacitor is stored at the

a. terminals

b. plates

c. dielectric

d. air

291. The resonance curve is a plot of frequency versus _____ for a series RLC circuit.

a. current

b. voltage

c. gain

d. impedance

292. For a series circuit, the higher the quality factor

a. the greater the bandwidth

b. the narrower the passband

c. the broader the resonance curve

d. the wider the passband

293. "Any resistance R in a branch of network in which a current I is flowing can be replaced by a voltage equal to IR." This states

a. compensation theorem

b. reciprocity theorem

c. Millman's theorem

d. superposition theorem

294. The internal resistance of an ideal current source is

a. infinite

b. zero

c. equal to the load resistance

d. to be determined

295. If three 100-pf capacitors are connected in series, then the total capacitance is

a. 300 pF

b. 100 pF

c. 50 pF

d. 33.3 pF

296. An inductance of 1 mH is

a. 0.001 H

b. 0.01 H

c. 0.0001 H

d. 0.10 H

297. A capacitor is basically constructed of

a. two conductors separated by a dielectric

b. two dielectric separated by a conductor

c. conductors and dielectric

d. conductors and semiconductors

298. In an inductive coil, the rate of rise of current is maximum

a. near the final maximum value of current

b. at mid-value of current

c. at half-power points

d. after one time constant

299. Two complex numbers or phasors are said to be conjugate if they

a. differ only in the algebraic sign of their quadrature components

b. differ only in the algebraic sign of their real components

c. are equal in their real and quadrature components including algebraic signs

d. are equal in their real components but differ in their quadrature components including algebraic signs

300. In an ac circuit with a resistive branch and an inductive branch in parallel, the

a. voltage across the inductance leads the voltage across the resistance by 90 deg

b. resistive branch current is 90 deg out-of-phase with the inductive branch current

c. resistive and inductive branch currents have the same phase

d. resistive and inductive branch currents are 180 deg out-of-phase

301. In an ac circuit with Xl and R in series, the

a. voltage across R and Xl are in phase

b. voltage across R lags the voltage across Xl by 90 deg

c. voltage across R and Xl are 180 deg out of phase

d. voltage across R leads the voltage across Xl by 90 deg

302. Leakage resistance in a capacitor results to

a. internal heating

b. internal bleeding

c. shorter useful file

d. short-circuiting

303. Voltage resonance means

a. series resonance

b. parallel resonance

c. current magnification

d. gain magnification

304. The unit of elastance is

a. farad

b. daraf

c. siemens

d. henry

305. The farad is not equivalent to which of the following combination of units.

a. CV^2

b. C^2 / J

c. C / V

d. J / V^2

306. Which component opposes voltage change?

a. resistor

b. inductor

c. capacitor

d. transistor

307. What is the peak factor for alternating current or voltage varying sinusoidally

a. 1.4142

b. 0.707

c. 0.636

d. 1.11

308. Which of the following is not a factor affecting dielectric strength?

a. mass

b. moisture content

c. temperature

d. thickness

309. The superposition theorem is used when the circuit contains a/an

a. reactive elements

b. active elements

c. number of voltage sources

d. single voltage source

310. What refers to such work at very low temperatures, near absolute zero?

a. cryogenics

b. superconductivity

c. subsonic

d. thermionic

311. A factor that states how much the resistance changes for a change in temperature.

a. resistivity

b. specific resistance

c. coefficient of temperature change

d. temperature coefficient of resistance

312. An alloy composed of 80% copper

a. Manganin

b. Constantan

c. Nichrome

d. German silver wire

313. At parallel resonance, the currents flowing through L and C are

a. infinite

b. zero

c. unequal

d. equal

314. In a rectangular wave, the peak factor is

a. 1.16

b. 1.73

c. 1.11

d. 1.0

315. In an RL series circuit

a. current lags voltage by less than 90 degrees

b. current leads voltage by 180 degrees

c. current lags voltage by 90 degrees

d. current lags voltage by 180 degrees

316. In a pure capacitance,

a. current leads voltage by 90 degrees

b. current lags voltage by 90 degrees

c. current lags voltage by 90 degrees

d. current lags voltage by 180 degrees

317. The ohmic value of a resistor with negative temperature coefficient

a. increases with increasing temperature

b. increases with decreasing temperature

c. stays unchanged with temperature change

d. stays unaffected even with increasing temperature

318. Which of the statements below is true?

a. current source is an active element

b. resistor is a linear element

c. voltage source is a passive element

d. diode is a non-linear element

319. Which of the following elements is active?

a. resistor

b. inductor

c. capacitor

d. ideal voltage source

320. What is the complex impedance of a circuit with an absolute resistance of 300 ohm(s)?

a. 0 + j300 ohm(s)

b. 300 + j90 ohm(s)

c. 0 - j300 ohm(s)

d. 300 + j0 ohm(s)

321. A law which states that when a constant electromotive force is applied to a circuit consisting of a resistor and a capacitor connected in series, the time taken for the potential on the plates of the capacitor to rise to any given fraction of its final value depends only on the product of capacitance and reactance.

a. Child's law

b. CR law

c. Coulomb's law

d. Debye T^3 law

322. Conventional flow assumes charges flow from

a. positive to negative

b. positive to positive

c. negative to positive

d. negative to negative

323. Electron flow assumes charges flow from

a. negative to positive

b. negative to negative

c. positive to negative

d. positive to positive

324. Series resonance occurs when

a. Xl=Xc

b. Xl=R

c. Z=R

d. Both A and C

325. The symbol Q refers to

a. resonance quotient

b. quality factor

c. power quotient

d. qualification test

326. The ratio of W/VA in an ac circuit means

a. power factor

b. reactive factor

c. quality factor

d. load factor

327. What is the reciprocal of quality factor?

a. power factor

b. reactive factor

c. dissipation factor

d. 1/Q factor

328. In liquids and gases, ionization current results from a flow of

a. positive or negative ions

b. free electrons

c. ions that are lighter in weight than electrons

d. protons

329. Vl = Vc in a series RLC circuit when

a. the value of the impedance is minimum

b. the power factor is zero

c. the current leads the total voltage by 90 degrees

d. the total voltage is zero

330. At what frequency will an inductor of 5mH have the same reactance as a capacitor of 0.1 uF?

a. 7.12 kHz

b. 7.12 Hz

c. 7.12 MHz

d. 7.12 GHz

331. Property of an electric circuit that dissipates electric energy.

a. reactance

b. impedance

c. resistance

d. conductance

332. What is the other name of relative permittivity?

a. dielectric strength

b. potential gradient

c. breakdown voltage

d. specific inductive capacity

333. In a series RLC circuit

a. the current lags Vl by 90 degrees

b. the current leads Vl by 90 degrees

c. Xl leads Xc by 90 degrees

d. Z = jXl at resonance

334. Resistor with color bands in the body.

a. wire-wound resistor

b. carbon-composition resistor

c. potentiometer

d. rheostat

335. In a resonant circuit, if Q is >= 10, resonant frequency _____ bandwidth.

a. bisects

b. exceeds

c. is less than

d. is equal to

336. Which of the following conditions is not true for a series RLC circuit at resonance?

a. Z=jXl

b. Xl=Xc

c. the power factor is one

d. the magnitude of Z is sqrt [R^2 + (Xl - Xc)^2]

337. The current is _____ times the maximum current at half-power points of a resonance curve.

a. 0.707

b. 1.414

c. 0.5

d. 0.632

338. A gang capacitor is a variable capacitor in which capacitance is varied by changing the

a. dielectric

b. number of plates

c. plate area

d. distance between plates

339. In an ac circuit with inductive reactance, the

a. phase angle of the circuit is always 45 degrees

b. voltage across the inductance must be 90 degrees out of phase with the applied voltage

c. current through the inductance lags its induced voltage by 90 degrees

d. current through the inductance and voltage across it are 180 degrees out-of-phase

340. If three 9 mH inductors are connected in parallel without mutual inductance, then the total inductance is

a. 3-mH

b. 9-mH

c. 27-mH

d. 18-mH

341. What is the specific resistance of a pure germanium?

a. 55 ohm-cm

b. 55 ohm-m

c. 55 ohm-mm

d. 55 kohm-m

342. Two capacitors of capacitance 9 uF and 19 uF in series will have a total capacitance of

a. 27 uF

b. 162 uF

c. 6 uF

d. 180 uF

343. In a series RLC circuit

a. increasing the frequency decreases the resistance

b. increasing the frequency increases the resistance

c. both Xl and Xc changes as frequency changes

d. impedance will always decrease

344. A series RLC circuit has a _____ power factor at its half-power points.

a. unity

b. leading

c. lagging

d. either B or C

345. Kirchoff's laws (KCL and KVL) are applicable to

a. dc circuits alone

b. ac circuits alone

c. dc as well as ac circuits

d. passive networks alone

346. A tank circuit is a

a. parallel LC circuit

b. series LC circuit

c. a resonant circuit

d. a non-resonant circuit

347. A capacitive load always has a _____ power factor.

a. leading

b. lagging

c. factor

d. unity

348. What is the temperature coefficient of resistance of Eureka?

a. infinity

b. negative

c. almost zero

d. positive

349. As applied to a series RLC circuit, bandwidth means

a. the frequency range for maximum power transfer

b. the difference between the highest and lowest frequencies of the oscillator

c. the separation of the half-power points

d. the frequency at which Xl=Xc

350. What is considered the effect of dielectric material?

a. increasing capacitance

b. decreasing capacitance

c. reducing the work voltage

d. increasing the distance between the plates

351. The open-circuit voltage at the terminal of load Rl is 60 V. Under the condition of maximum power transfer, the load voltage will be

a. 60 V

b. 15 V

c. 20 V

d. 30 V

352. If a capacitor is rated for 200 Vdc, what is the effective ac working voltage?

a. 50 V

b. 100 V

c. 200 V

d. 400 V

353. If resonant frequency is 10 kHz and quality factor is 50, then

a. bandwidth is 200 Hz

b. Xl is 50000 ohms

c. R is 50 ohms

d. Xc is 50000 ohms

354. Which statement is true?

a. A series resonant circuit is of high impedance

b. A parallel resonant circuit is of low impedance

c. A series resonant circuit is inductive if it operates at a frequency higher than the resonant frequency

d. A parallel resonant circuit is inductive if it operates at a frequency higher than the resonant frequency

355. What is considered as the most important value of a sine wave?

a. effective value

b. peak value

c. average value

d. instantaneous value

356. An ac series circuit is composed of a resistance of 20 ohms, inductive reactance of 40 ohms, and a capacitive reactance of 15 ohms. If a current of 1 ampere is flowing, what is the applied voltage?

a. 320 V

b. 32 V

c. 220 V

d. 22 V

357. An intermittent and non-symmetrical alternating current like that obtained from the secondary winding of an induction coil.

a. Faradic current

b. Transient ac current

c. Inductive current

d. Capacitive current

358. The value of temperature coefficient, alpha, is dependent upon

a. the nature of material and temperature

b. the length of material

c. the cross-sectional area of the material

d. the volume of the material

359. At what frequency will the current in a series RLC circuit reach its maximum value for an applied voltage of 15 V with R = 500 ohms, L = 100 uH and C = 0.001 uF?

a. 503 kHz

b. 403 kHz

c. 603 kHz

d. 303 kHz

360. If two equal resistances connected in series across a certain supply are now connected in parallel across the same supply, the power produced will be _____ the series connection.

a. 1/2

b. 1/4

c. 2x

d. 4x

361. The voltage lags the current by pi/2 cycle in a

a. purely resistive circuit

b. purely inductive circuit

c. purely capacitive circuit

d. circuit containing resistance, capacitance, and inductance

362. What is the half-power bandwidth of a parallel resonant circuit which has a resonant frequency of 3.6 MHz and Q of 218?

a. 1.65 kHz

b. 16.5 MHz

c. 16.5 KHz

d. 165 KHz

363. Which of the following materials serves as protection against overload?

a. fuse

b. switch

c. resistor

d. relay

364. Transient period is considered over after

a. 5 time constants

b. 1 time constant

c. 100 time constants

d. 6 time constants

365. What rating of a resistor determines its ability to absorb heat?

a. wattage

b. ohmic

c. current

d. voltage

366. An open inductor has

a. zero resistance and infinite inductance

b. infinite resistance and zero inductance

c. infinite resistance and infinite inductance

d. zero resistance and zero inductance

367. What is the reading of an ohmmeter for a shorted capacitor?

a. zero

b. infinity

c. k ohms

d. M ohms

368. _____ capacitance exists not through design but simply because two conducting surfaces are relatively close to each other.

a. surge

b. stray

c. natural

d. normal

369. The average value of a sawtooth or triangular wave is _____ times its peak value.

a. 0.577

b. 0.500

c. 0.318

d. 0.637

370. A series RLC circuit consists of a 10-ohm resistor in series with L = 10 uH, and C = 100 uF. Determine a new value of L for which the resonant frequency is 1/2 the original value.

a. 40 uH

b. 40 mH

c. 40 pH

d. 40 nH

371. What is the peak factor of a triangular wave?

a. 1.16

b. 1.73

c. 1.41

d. 1.11

372. Parallel resonant circuit is sometimes called as

a. acceptor circuit

b. rejector circuit

c. inductive circuit

d. capacitive circuit

373. When two pure sine waves of the same frequency and the same amplitude which are exactly 180 degrees out of phase are added together, the result is

a. a wave with twice the amplitude

b. a wave with half the amplitude

c. zero signal

d. a wave with twice the frequency

374. If two complex conjugates are added, _____ component results.

a. in-phase

b. quadrature

c. complex

d. out of phase

375. If an emf in circuit A produces a current in circuit B, then the same emf in circuit B produces the same current in circuit A. This theorem is known as

a. Maximum power transfer theorem

b. Millman's theorem

c. Reciprocity theorem

d. Norton's theorem

376. According to Gauss' theorem, flux can be equated to

a. charge

b. field intensity

c. current

d. voltage

377. An open resistor when checked with an ohmmeter reads

a. zero

b. infinite

c. high but within the tolerance

d. low but not zero

378. Norton's theorem is _____ Thevenin's theorem.

a. the same as

b. the converse of

c. older than

d. more accurate than

379. What value of R is needed with a 0.05 µF C for an RC time constant of 0.02s?

a. 400 ohm(s)

b. 400 Mohm(s)

c. 400 Gohm(s)

d. 400 kohm(s)

380. Which of the following is the statement of Ohm's law?

a. Electric current is directly proportional to both voltage and resistance

b. Electric current varies directly as the voltage and inversely as the resistance

c. Electric power is directly proportional to the resistance and inversely as the current squared

d. Electrical power is directly proportional to both voltage squared and the resistance

381. The admittance of a parallel RLC circuit is found to be the _____ sum of conductance and susceptances.

a. algebraic

b. arithmetic

c. vector

d. phasor

382. A wire of one kilometer length has a resistance of 20 ohm(s). If the length is halved, then the new resistance is _____ the original resistance.

a. half

b. twice

c. 1/4

d. three times

383. A series-parallel combination of identical resistors will

a. increase the power rating compared with one resistor alone

b. increase the voltage rating compared with one resistor alone

c. reduce the voltage rating compared with resistor alone

d. result in an expensive circuit

384. The _____ of an alternating current is defined as the fractional part of a period or cycle through which the quantity has advanced from selected origin.

a. phase

b. frequency

c. amplitude

d. waveform

385. An inductive circuit of resistance 16.5 ohm(s) and inductance of 0.14 H takes a current of 25 A. If the frequency is 50 Hz, find the supply voltage.

a. 1501 V

b. 1174 V

c. 1877 V

d. 991 V

386. Which of the following has a positive temperature coefficient?

a. mica

b. manganin

c. silicon

d. carbon

387. The ratio of the flux density to the electric field intensity in the dielectric is called

a. permittivity

b. field intensity

c. permeability

d. elasticity

388. It is impossible to change the voltage across a capacitor instantly, as this would produce _____ current.

a. infinite

b. zero

c. low

d. high

389. Which of the following is not a factor affecting capacitance of a basic capacitor?

a. area of plates

b. number of plates

c. distance between plates

d. dielectric material used

390. When voltage is applied across a ceramic dielectric the electrostatic field produced is 50 times greater than air dielectric. The dielectric constant of ceramic therefore is

a. 50

b. 100

c. 16.67

d. 5

391. The reason why alternating current can induce voltage is

a. it has a high peak value

b. it has a stronger magnetic field than direct current

c. it has a constant magnetic field

d. it has a varying magnetic field

392. When two unequal values of resistors are connected in parallel across a dc source, greater current flows through the

a. higher resistance

b. lower resistance

c. higher wattage resistance

d. lower wattage resistance

393. A real current source has

a. infinite internal resistance

b. zero internal resistance

c. large internal resistance

d. small internal resistance

394. What is the cross-sectional area of a conductor whose diameter is 0.001 inch?

a. one micron

b. one angstrom

c. one steradian

d. one circular mil

395. Which of the following describes the action of a capacitor?

a. stores electrical energy

b. opposes changes in current flow

c. creates a dc resistance

d. converts ac to dc

396. High resistance value is a consequence of the _____ of the film.

a. thickness

b. length

c. thinness

d. area

397. For parallel capacitors, total charge is

a. the sum of individual charges

b. equal to the charge of either capacitors

c. equal to the product of the charges

d. the quotient of the charges

398. Which waveform in which the rms value and the mean value are equal?

a. square wave

b. triangular wave

c. sine wave

d. sawtooth

399. In a series circuit with unequal resistances

a. the highest R has the highest V

b. the lowest R has the highest V

c. the lowest R has the highest I

d. the highest R has the highest I

400. In a parallel bank with unequal branch resistances

a. the highest R has the highest I

b. the lowest R has the highest V

c. the lowest R has the highest I

d. the highest R has the highest V

401. A rheostat is a form of

a. variable resistor

b. variable capacitor

c. potentiometer

d. thermocouple

402. Metal tin becomes superconductor at approximately

a. 6 K

b. 3.7 K

c. 5 K

d. 4.7 K

403. In a complex resistance-reactance plane, Xl is represented

a. by an axis opposite the R axis

b. by an axis perpendicular to the Xc axis

c. by an axis opposite the Xc axis

d. by an axis parallel to the R axis

404. When the net reactance in a series coil-capacitor circuit is zero at frequency f, the nature of its reactance of frequency 2f is

a. inductive

b. capacitive

c. resistive

d. infinite

405. Which of the following is a way of decreasing mutual inductance?

a. moving the coils closer

b. moving the coils apart

c. decreasing the number of turns of either coil

d. increasing the number of turns of either coil

407. The charging of a capacitor through a resistance obeys

a. exponential law

b. logarithmic law

c. linear law

d. square law

408. The Q-factor of a parallel resonant circuit is also known as

a. voltage magnification factor

b. current magnification factor

c. gain magnification factor

d. resonance magnification factor

409. What is the specific resistance of a pure silicon?

a. 55 ohm(s).mm

b. 55 ohm(s).m

c. 55 ohm(s).cm

d. 55 kohm(s).m

410. A capacitance of 0.05 μF equals

a. 0.05 x 10^6 F

b. 0.05 x 10^-6 F

c. 0.05 x 10^-12 F

d. 0.05 x 10^12 F

411. A 5 μF capacitor charge to 5V has a stored charge equal to

a. 1 μC

b. 5 μC

c. 25 μC

d. 200 μC

412. The factor 0.707 for converting peak to rms applies only to

a. square waves

b. triangle waves

c. sawtooth waves

d. sine waves

413. When two in-phase sine waves that have identical frequency and amplitude are added together, then the result is a sine wave with _____ the amplitude of either.

a. half

b. twice

c. four times

d. 1/4

414. Liquids that are good conductors because of ionization are called

a. electrolytic

b. bases

c. acids

d. electrolytes

415. Tungsten filament of bulbs has a hot resistance higher than its cold resistance due to its temperature coefficient which is

a. positive

b. negative

c. zero

d. infinite

416. A term used to express the amount of electrical energy stored in electrostatic field.

a. joules

b. coulombs

c. watts

d. electron-volt

417. With double the number of turns by the same length and area, the inductance is

a. the same

b. doubled

c. quartered

d. quadrupled

418. The temperature coefficient of resistance of electrolytes is

a. negative

b. positive

c. zero

d. infinite

419. _____ refers to the lowest voltage across any insulator that can cause current flow.

a. conduction voltage

b. critical voltage

c. breakdown voltage

d. voltage capacity

420. Capacitance increases with

a. larger plate area and less distance between plates

b. larger plate area and greater distance between plates

c. smaller plate area and less distance between plates

d. higher values of applied voltage

421. What is the resonant frequency of a circuit when L of 3 microhenrys and C of 40 picofarads are in series?

a. 14.5 kHz

b. 145 MHz

c. 14.5 MHz

d. 145 kHz

422. For a triangular and sawtooth waveform the rms voltage or current equals

a. 0.707 times peak value

b. 0.577 times peak value

c. 0.577 times average value

d. 0.707 times rms value

423. If two resistances of 9 ohm(s) and 6 ohm(s) are connected in parallel, the total resistance is

a. 54 ohm(s)

b. 0.3 ohm(s)

c. 15 ohm(s)

d. 3.6 ohm(s)

424. Refers specifically to steady state values of quantities in ac circuits which are complex numbers.

a. domain

b. scalar quantity

c. vector quantity

d. phasor quantity

425. A capacitor is used to

a. block dc current

b. pass dc current

c. open voltage source

d. short the voltage source

426. The usual load of a dc circuit is a/an

a. resistor

b. capacitor

c. inductor

d. both inductor and capacitor

427. The second strip of an electronic resistor color code represents

a. the multiplier

b. the second digit of the value

c. the temperature

d. the tolerance

428. Which of the following is a preferred resistor value?

a. 520

b. 47

c. 43000

d. 54321

429. A three-by-three, series-parallel matrix of resistors, all having the same ohmic value, would have a net resistance of

a. one-third the value of a single resistor

b. three times the value of a single resistor

c. the same value as a single resistor

d. nine times the value of a single resistor

430. In an ac wave, 30 degrees of phase is _____ of a cycle.

a. 1/2

b. 1/12

c. 1/3

d. 1/30

431. What is the value of a carbon composition resistor with the following color code: brown, white, orange, red

a. 190 ohm(s); 10 %

b. 19 kohm(s); 2%

c. 19 kohm(s); 20%

d. 1.9 kohm(s); 2%

432. The electric field strength between capacitor plates has a unit of

a. volts per meter

b. volts per mil

c. amperes per meter

d. amperes per mil

433. For multi-plate capacitor, capacitance is proportional to

a. number of plates less than one (n-1)

b. number of plates plus one (n+1)

c. number of plates less two (n-2)

d. number of plates (n)

434. A capacitor consists of two

a. conductors only

b. dielectric only

c. conductors separated by a dielectric

d. dielectric separated by a conductor

435. How many coulombs are delivered by a storage battery in 24 hours if it is supplying current at the rate of 3 A?

a. 2.592 x 10^5 C

b. 2.592 x 10^3 C

c. 2.592 x 10^8 C

d. 2.592 x 10^12 C

436. When frequency of an ac wave decreases, the value of Xl in a coil

a. approaches zero

b. gets larger positively

c. gets larger negatively

d. stays constant

437. The temperature-resistance coefficient of pure gold is

a. 0.0034

b. 0.0037

c. 0.0038

d. 0.0039

438. The capacitor opposes any change in voltage across it by

a. passing a voltage proportional to the rate of change of current

b. acting as a short circuit at time equal to zero

c. passing a current proportional to the rate of change of voltage

d. acting as a short voltage at time equal to infinity

439. What is the most common non-sinusoidal waveform?

a. square wave

b. triangular wave

c. trapezoidal wave

d. sawtooth wave

440. Which of the following capacitors is suitable for dc filter circuits?

a. mica

b. ceramic

c. paper

d. electrolytic

441. A series RLC circuit has R of 10 ohm(s) and Xl of 5 ohm(s). Its impedance in rectangular form is given by

a. 10 + j 5 ohm(s)

b. 10 + j 10 ohm(s)

c. 10 - j 5 ohm(s)

d. 10 - j 10 ohm(s)

442. What is the reciprocal of capacitance?

a. reluctance

b. susceptance

c. elastance

d. conductance

443. If the output resistance of a voltage source is 4 ohm(s), its internal resistance should be

a. 4 ohm(s)

b. 8 ohm(s)

c. 2 ohm(s)

d. infinite

444. The curve between current and frequency is termed as

a. voltage curve

b. gain curve

c. power curve

d. resonance curve

445. What is the total effective capacitance of two 0.25 microfarad capacitors connected in series?

a. 0.125 microfarad

b. 1.25 microfarad

c. 0.50 microfarad

d. 2.5 microfarad

446. _____ can be used to estimate resonant frequency and to find reactance at any frequency for any value of capacitor or inductor.

a. Smith chart

b. reactance chart

c. impedance chart

d. resonance curve

447. For a parallel AC circuit, _____ is used as a reference phasor.

a. voltage

b. power

c. current

d. resistance

448. For a series AC circuit, _____ is not used as a reference phasor.

a. voltage

b. impedance

c. current

d. resistance

449. If a certain circuit has a current that is lagging the voltage by 45 degrees, then it displays

a. pure inductive reactance

b. resistance and capacitive reactance

c. resistance and inductive reactance

d. pure capacitive reactance

450. _____ is the maximum voltage that can be applied across the capacitor for very short period of time.

a. working voltage

b. surge voltage

c. stray voltage

d. peak voltage

451. What is expected when two 20 kohm(s), 1 W resistor in parallel are used instead of one 10kohm(s), 1 watt?

a. provides higher current

b. provides less power

c. provides more power

d. provides wider tolerance

452. Which of the following materials has the lowest dielectric strength?

a. glass

b. paper

c. mica

d. teflon

453. The distance between the capacitor plates increases two times, then its capacitance

a. increases two times

b. increases four times

c. decreases two times

d. decreases four times

454. The ratio between the active power and the apparent power of a load in an ac circuit is called

a. quality factor

b. power factor

c. power ratio

d. power reactive

455. When the power factor of a circuit is zero,

a. power absorbed is maximum

b. power absorbed is minimum

c. power absorbed is zero

d. the impedance is minimum

456. How many degrees of phase represents one full cycle?

a. 360

b. 180

c. 270

d. 90

457. Which of the following does not generally affect the value of a capacitor?

a. the dielectric material used

b. the surface are of the plates

c. the thickness of the dielectric

d. the voltage applied to the plate

458. What is the purpose of a load in an electric circuit?

a. to increase the circuit current

b. to decrease the circuit current

c. to utilize the electrical energy

d. to make the circuit complete

459. The power factor of a certain circuit in which the voltage lags behind the current is 80%. To increase the power to 100%, it is necessary to add _____ to the circuit.

a. inductance

b. capacitance

c. resistance

d. impedance

460. Refers to the outward-curving distortion of the lines of force near the edges of two parallel metal plates that form a capacitor.

a. skin effect

b. night effect

c. edge effect

d. hall effect

461. If voltage across the plates of 2-farad capacitor is increased by 4 V, then charge on the plates will

a. decrease by 2 C

b. increase by 2 C

c. decrease by 4 C

d. increase by 4 C

462. What does a capacitor store?

a. voltage

b. charge

c. current

d. power

463. The mutual inductance between two coils is _____ the reluctance of magnetic path.

a. directly proportional to

b. inversely proportional to

c. independent of

d. equal to

464. The result of rust in electrical (wire) connection is

a. inductance

b. conductance

c. impedance

d. resistance

465. Which of the following is a disadvantage of wire-wound resistors?

a. it has reactance in radio-frequency circuits

b. it cannot handle much power

c. it draws a large amount of current

d. it cannot handle high voltage

466. The resistance of an insulator _____ when its temperature is increased

a. decreases

b. remains the same

c. increases

d. varies

467. The wavelength of an alternating waveform depends upon the _____ of the variation.

a. period

b. number

c. frequency

d. amplitude

468. Delta to wye or wye to delta transformation technique is applied to a _____ network.

a. one-terminal

b. two-terminal

c. three-terminal

d. complex

469. For greater accuracy, the value of phase angle theta should be determined from

a. cos theta

b. tan theta

c. sin theta

d. sec theta

470. Inductance reactance applies only to sine waves because it

a. increases with lower frequencies

b. increases with lower inductance

c. depends on the factor 2pi

d. decreases with higher frequencies

471. _____ increases the resistance of wire at high frequencies.

a. temperature

b. voltage

c. skin effect

d. insulation

472. An inductor carries 2 A dc. If its inductance is 100 µH, then what is its inductive reactance?

a. zero

b. 1.3 kohm(s)

c. 628 ohm(s)

d. -629 ohm(s)

473. Barium-strontium titanite dielectric material is also called

a. ceramic

b. polyester

c. electrolytic

d. bakelite

474. In the 5-band method of capacitor color coding, the first band indicates

a. temperature coefficient

b. tolerance

c. 1st digit

d. capacitance value

475. What is the most convenient way of achieving large capacitance?

a. by using multiplate construction

b. by using air as dielectric

c. by decreasing distance between plates

d. by using dielectric of low permittivity

476. A linear circuit is one whose parameters

a. change with change in voltage

b. change with change in current

c. do not change with voltage and current

d. change with change in voltage and current

477. For a linear, _____ voltage or current is used to calculate average power

a. rms

b. peak

c. average

d. instantaneous

478. When two coils of identical reactance are in parallel without mutual inductance, the reactance of the combination is _____ the reactance of each coil.

a. 1/2

b. twice

c. four times

d. ¼

479. Which of the following is also known as anti-resonant circuit?

a. parallel resonant circuit

b. series resonant circuit

c. tuned circuit

d. tank circuit

480. In a complex number 5 + j10, 10 is called _____ part.

a. imaginary

b. real

c. conjugate

d. integer

481. The presence of an electric current is made known by

a. electric shock

b. effects produced

c. magnetic shock

d. flashing

482. The reciprocal of a complex number is

a. a complex number

b. a real number

c. an imaginary number

d. a whole number

483. Which of the following has negative temperature coefficient?

a. carbon

b. nickel

c. brass

d. constantan

484. Which of the following is a common material used in wire-wound resistors?

a. manganin

b. carbon

c. bronze

d. german silver wire

485. If one resistance in a series connection is open, then

a. the current is zero in all other resistances

b. the current is maximum in all the other resistances

c. the voltage is zero across the open resistance

d. the voltage is infinite across the open resistance

486. What determines the magnitude of electric current?

a. the rate at which electrons are produced

b. the type of material used

c. the current carrying capacity of the circuit

d. the rate at which electrons pass a given point

487. For a carbon composition resistor, typical resistance values range from

a. 2.7 ohm(s) to 22 Mohm(s)

b. 1000 ohm(s) to 10000 ohm(s)

c. 10 ohm(s) to 10 Mohm(s)

d. 2.7 ohm(s) to 2.7 Gohm(s)

488. A lead conductor has a resistance of 25 ohm(s) at 0 degrees Celsius. Determine its resistance at - 30 degrees Celsius

a. 22ohm(s)

b. 24ohm(s)

c. 12ohm(s)

d. 11ohm(s)

489. An impedance given by 90 cis (-45 deg) is a/an _____ impedance.

a. inductive

b. conductive

c. resistive

d. capacitive

490. If a coil has a Q of 10, it means that

a. the energy stored in the magnetic field of the coil is 10 times the energy wasted in its resistance

b. the energy wasted in its resistance is 10 times the energy stored in the magnetic field of the coil

c. it is a low Q coil

d. it is a high Q coil

491. What is the rms value of the square value?

a. equals its peak value

b. equals its peak-to-peak value

c. peak divided by square root of two

d. peak divided by pi

492. The rms value of a triangular or sawtooth waveform is _____ times its peak value.

a. 0.577

b. 0.500

c. 0.25

d. 0.707

493. In a multiple capacitor, the plate area is

a. increased

b. the same

c. decreased

d. variable

494. What is the time constant for L of 240 mH in series with R of 20 ohm(s)?

a. 12 ms

b. 4.9 s

c. 83.3 s

d. 12 s

495. In an ac circuit, the power dissipated as heat depends on

a. impedance

b. capacitive reactance

c. resistance

d. inductive reactance

496. Which of the following dielectric materials makes the lowest-capacitance capacitor?

a. paper

b. mica

c. air

d. electrolyte

497. In adding or subtracting phasor quantities, _____ form is the most convenient.

a. polar

b. rectangular

c. trigonometric

d. exponential

498. In dividing or multiplying phasor quantities, _____ form is used.

a. polar

b. rectangular

c. trigonometric

d. exponential

499. The power factor of a circuit is equal to

a. RZ

b. Xc/Z

c. Xl/Z

d. R/Z

500. The capacitance of a capacitor is _____ relative permittivity.

a. directly proportional to

b. inversely proportional to

c. equal to

d. inversely proportional to the square of

501. If a multiple capacitor has 10 plates, each of area 10 square cm, then

a. 10 capacitors will be in parallel

b. 10 capacitors will be in series

c. 9 capacitors will be in parallel

d. 9 capacitors will be in series

502. Of the equivalent combination of units, which one is not equal to watt?

a. ohm(s)^2/V

b. AV

c. A^2 * ohm(s)

d. J/s

503. A neon glow lamp used as a night light ionizes at approximately

a. 70 V

b. 80 V

c. 90 V

d. 100 V

504. What dielectric is generally employed by a variable capacitor?

a. mica

b. air

c. electrolyte

d. ceramic

505. A switch designed to have low capacitance between its terminal when open.

a. LOCAP switch

b. AntiLOCAP switch

c. Anticapacitance switch

d. capacitance switch

506. A resistor wound with a wire doubled back on itself to reduce the inductance.

a. bifilar resistor

b. wire-wound resistor

c. anti-inductive resistor

d. bleeder resistor

507. _____ is a fusion of elements, without chemical action between them.

a. mixture

b. compound

c. alloy

d. ionization

508. In calculating maximum instantaneous power _____ voltage or current is used.

a. peak

b. average

c. rms

d. instantaneous

509. The area of capacitor plates increases two times, then its capacitance

a. increases two times

b. increases four times

c. decreases two times

d. decreases four times

510. If the inductance is decreased, the impedance of the circuit containing a resistor, a capacitor and an inductor connected in series to an ac source

a. decreases

b. increases

c. decreases or increases

d. decreases, increases or remains the same

511. When the movable plates of a gang capacitor completely overlaps the fixed plates, the capacitance of the capacitor is

a. halfway between the maximum and the minimum

b. maximum

c. minimum

d. zero

512. In a circuit, a passive element is one which

a. supplies energy

b. receives energy

c. both supplies and receives energy

d. attenuates signal

513. Rationalizing the denominator of a complex number means

a. eliminating the j component in the denominator

b. adding j component in the denominator

c. eliminating the j component in the numerator

d. adding the j component in the numerator

514. When two complex conjugates are subtracted, the result is a

a. quadrature component only

b. complex component

c. in-phase component

d. real component

515. A coil of inductance L has an inductive reactance of Xl in an ac circuit in which the effective current is I. The coil is made from a superconducting material. The rate at which the power is dissipated in the coil is

a. 0

b. I^2 * Xl

c. I * Xl

d. I * Xl^2

516. If the capacitance of mica capacitor is 5 times the capacitance of air capacitor, then the relative permittivity of mica is

a. 2.5

b. 5

c. 10

d. 25

517. The hot resistance of an incandescent lamp is about _____ times its cold resistance.

a. 10

b. 5

c. 50

d. 100

518. When the temperature of a copper wire is increased, its resistance is

a. increased

b. decreased

c. constant

d. zero

520. A trimmer is a variable capacitor in which capacitance is varied by changing the

a. number of plates

b. dielectric

c. distance between the plates

d. plate area

521. The reason why electrical appliances are not connected in series.

a. greater electrical power saving

b. power loss is minimum

c. appliances have different current ratings

d. all of the above

522. From its definition, the unit of electric field, E is the N/C and the equivalent of E is the

a. V(m)^2

b. v(m)

c. V/m^2

d. V/m

523. Which of the following is the peakiest?

a. square wave

b. sinusoidal wave

c. triangular wave

d. rectangular wave

524. Why are inductance and capacitance not relevant in a dc circuit?

a. because it is a simple circuit

b. because dc circuits only require resistance as load

c. because they do not exist in a dc circuit

d. because frequency of dc is zero

525. When capacitors are connected in parallel, the total capacitance is

a. greater than the largest capacitor

b. smaller than the largest capacitor

c. smaller than the smallest capacitor

d. greater than the smallest capacitor

526. When current and voltage are in phase in an ac circuit, the _____ is equal to zero.

a. resistance

b. reactance

c. inductance

d. capacitance

527. Thevenin's theorem is what form of an equivalent circuit?

a. current

b. voltage

c. both current and voltage

d. neither current nor voltage

528. Which of the following combination of length and cross-sectional area will give a certain volume of copper the least resistance?

a. 2L and A/2

b. does not matter because the volume of copper remains the same

c. L and A

d. L/2 and 2A

529. The ratio between the reactive power and the apparent power of an ac load is called

a. quality factor

b. power factor

c. power ratio

d. reactive factor

530. What is the efficiency under the conditions of maximum power transfer?

a. 50 %

b. 100 %

c. 25 %

d. 75 %

531. The charging of a capacitor through a resistance follows what law?

a. linear law

b. hyperbolic law

c. inverse-square law

d. exponential law

532. Norton's theorem is what form of an equivalent circuit?

a. voltage

b. current

c. both voltage and current

d. neither voltage nor current

533. What is the total capacitance of 10 capacitors, each of 20 µF, in series?

a. 200 µF

b. 2 µF

c. 100 µF

d. 0.5 µF

534. An inductive load always has a _____ power factor.

a. leading

b. lagging

c. zero

d. unity

535. When resistances are connected in parallel, the total resistance is

a. less than the smallest resistance in the connection

b. greater than the smallest resistance in the connection

c. between the smallest and greatest resistance in the connection

d. increasing or decreasing depending upon the supply voltage

536. The arc across a switch when it opens an RL circuit is a result of the

a. large self-induced voltage across L

b. long time constant

c. low resistance of the open switch

d. surge of resistance

537. _____ is a rotating vector whose projection can represent either current of voltage in an ac circuit.

a. polar diagram

b. scalar quantity

c. velocity

d. phasor

538. Which factor does not affect resistance?

a. length

b. resistivity

c. cross-sectional area

d. mass

539. Which of the following capacitors are used only in dc circuits?

a. mica

b. ceramic

c. mylar

d. electrolytic

540. The maximum power transfer theorem is used in

a. power system

b. electronics circuits

c. refrigeration

d. air conditioning

541. In Norton's theorem, the short circuit current is obtained by

a. operating the load terminals

b. shorting the load terminals

c. opening the voltage source

d. shorting the voltage source

542. For maximum power transfer, what is the relation between load resistance Rl and the internal resistance of the voltage source?

a. Rl = 2 r

b. Rl = 1.5 r

c. Rl = r

d. Rl = 3 r

543. A capacitor of 0.5 μF charged to 220 V is connected across an uncharged 0.5 μF capacitor. What is the voltage across each capacitor?

a. 220 V

b. 150 V

c. 110 V

d. 22 V

544. When capacitors are connected in series, the total capacitance is

a. smaller than the smallest capacitor

b. smaller than the largest capacitor

c. greater than any of the capacitor

d. greater than the largest capacitor

545. What theorem is generally used in the analysis of vacuum tubes?

a. superposition theorem

b. Millman's theorem

c. Thevenin's theorem

d. Norton's theorem

546. Another term of the quality factor of the resonant circuit.

a. figure of merit

b. figure of demerit

c. noise factor

d. noise figure

547. Which of the following represents the energy stored in a capacitor?

a. (CV^2)/2

b. (2Q^2)/C

c. (C^2)/V

d. CV

548. What theorem is usually used in the analysis of transistor circuit?

a. superposition theorem

b. Millman's theorem

c. Thevenin's theorem

d. Norton's theorem

549. Which of the following capacitors has the highest cost per μF?

a. plastic

b. air

c. mica

d. electrolytic

550. Under the conditions of maximum power transfer, a voltage source is delivering a power of 15 W to the load. What is the power generated by the source?

a. 60 W

b. 30 W

c. 15 W

d. 4 W

551. Which of the following is neither a basic physical law nor derivable from one?

a. ohm's law

b. coulomb's law

c. kirchoff's first law

d. kirchoff's second law

552. Another term for superconductor.

a. generic conductor

b. ultraconductor

c. cryotron

d. cryogenic conductor

553. A circuit whose parameters change with voltage or current.

a. non-linear circuit

b. linear circuit

c. complex circuit

d. passive circuit

554. The potential gradient in a cable is maximum in

a. conductor

b. outer sheath

c. insulation

d. uniformly all over

555. The Q-factor of a parallel resonant circuit is also known as

a. current magnification factor

b. voltage magnification factor

c. load factor

d. leakage factor

556. The Q-factor of a series resonant circuit is also known as

a. current magnification factor

b. voltage magnification factor

c. load factor

d. leakage factor

557. What is the form factor of a triangular wave?

a. 1.16

b. 1.11

c. 1.73

d. 1.41

558. In a rectangular wave, the form factor is

a. 1.11

b. 1.16

c. 1.0

d. 1.73

559. Which of the following dielectric materials makes the highest-capacitance capacitor?

a. air

b. barium-strontium titanite

c. mica

d. electrolyte

560. In a circuit, an active element is one which

a. supplies energy

b. receives energy

c. both supplies and receives energy

d. amplifies signal

561. An electric circuit contains

a. passive elements

b. active elements

c. both active and passive elements

d. reactive elements

562. What is the hot resistance of a 100 W, 220 V incandescent lamp?

a. 2.2 ohm(s)

b. 22 ohm(s)

c. 484 ohm(s)

d. 4.84 ohm(s)

563. Which statement is true about a passive circuit?

a. A circuit with neither a source of current nor a source of potential difference

b. A circuit with voltage source

c. A circuit with a current source

d. A circuit with only resistance as load

564. _____ is a closed path made of several branches of the network.

a. junction

b. node

c. terminal

d. loop

565. The internal resistance of an ideal voltage source is

a. infinite

b. equal to the load resistance

c. zero

d. to be determine

566. What is the conductance of a circuit having three 10 ohm(s) resistors in parallel?

a. 0.30 S

b. 3.33 S

c. 0.33 S

d. 30 S

567. Electric energy refers to

a. volt divided by coulomb

b. volt-ampere

c. volt-coulomb

d. watt divided by time

568. A capacitor requires 12 μC of charge to raise its potential to 3 V. What is the capacitance of the capacitor?

a. 36 μF

b. 15 μF

c. 0.25 μF

d. 4 μF

569. A capacitor opposes change in

a. voltage

b. current

c. voltage and current

d. neither voltage or current

570. What is the total resistance of a two equal valued resistors in series?

a. the difference of both

b. the product of bot

c. twice as one

d. the sum of their reciprocals

571. The ratio of maximum value to the effective value of an alternating quantity is called

a. form factor

b. peak factor

c. dynamic factor

d. leakage factor

572. For series capacitors, total charge is

a. the sum of individual charges

b. equal to the charge of either capacitors

c. equal to the product of the charges

d. the quotient of the charges

573. Series resonant circuit is sometimes known as

a. rejector circuit

b. acceptor circuit

c. inductive circuit

d. capacitive circuit

574. The force of attraction or repulsion between two poles is inversely proportional to the square of the distance between them. This is known as

a. Newton's first law

b. Faraday's first law of electromagnetic induction

c. Coulomb's first law

d. Coulomb's second law

575. Whenever a conductor cuts magnetic flux, an emf is induced in it. This is known as

a. Coulomb's Law

b. Joule's Law

c. Faraday's Law

d. Ohm's Law

576. A law that states that the polarity of the induced voltage will oppose the change in magnetic flux causing the induction

a. Joule's Law

b. Faraday's Law

c. Coulomb's Law

d. Lenz' law

577. States that current in a thermionic diode varies directly with three-halves power of anode voltage and inversely with the square of the distance between the electrodes when operating conditions are such that the current is limited only by the space charge

a. Hall's Law

b. Joule's Law

c. Child's Law

d. Coulomb's Law

578. States that the ratio of the thermal conductivity to the electric conductivity is proportional to the absolute temperature of all metals

a. Wien's displacement law

b. Hartley's Law

c. Hall's Law

d. Wiedemann-Franz law

579. A law establishing the fact that the algebraic sum of the rises and drops of the mmf around a closed loop of a magnetic circuit is equal to zero

a. Kirchoff's circuital law

b. Maxwell's circuital law

c. Ampere's circuital law

d. Coulomb's circuital law

580. "The net electrical charge in an isolated system remains constant". This is known as the

a. Law of conservation of charge

b. Coulomb's first law

c. Coulomb's second law

d. Law of conservation of energy

581. Lenz's law is the consequence of the law of conservation of

a. energy

b. charge

c. field lines

d. momentum

582. Lenz' law states that the direction of the induced emf and hence current

a. is determined by the rate of current flux

b. is found by the right hand rule

c. is found by the left hand rule

d. always opposes the cause producing it

583. If you hold a conductor with right hand so that the stretched thumb points in the direction of the current, then, encircling fingers will give the direction of magnetic lines of force round the conductor. This is known as

a. left hand cork screw rule

b. right hand cork screw rule

c. left hand rule

d. right hand rule

584. If a right-handed bottle opener cork screw is assumed to be along the conductor so as to advance in the direction of current flow, the motion of the handle will indicate the direction of magnetic flux produced around the conductor. This is known as

a. right hand rule

b. left hand rule

c. cork screw rule

d. end rule

585. If in looking at any one end of a solenoid, the direction of current flow is found to be clockwise then the end under observation is a south pole. This is known as

a. right hand rule

b. left hand rule

c. cork screw rule

d. end rule

586. If the solenoid is gripped by the right hand with the fingers pointing to the direction of the current flow, the outstretched thumb will then point the north pole. This is known as

a. right hand rule

b. helix rule

c. end rule

d. cork screw rule

587. The process by which an emf and hence current is generated or induced in an inductor when there is a change in the magnetic flux linking the conductor is called

a. electromagnetic induction

b. mutual induction

c. Faraday's law

d. electromagnetic interference

588. The emf induced in a coil due to the change in its own flux linked with it is called

a. mutually induced emf

b. dynamically induced emf

c. statically induced emf

d. self induced emf

589. The emf induced in a coil due to the changing current of another neighboring coil is called

a. mutually induced emf

b. self induced emf

c. statically induced emf

d. dynamically induced emf

590. When a conductor is stationary and the magnetic field is moving or changing, the emf induced is called

a. statically induced emf

b. mutually induced emf

c. self induced emf

d. dynamically induced emf

591. The magnetic potential in a magnetic circuit can be measured in terms of

a. mmf

b. emf

c. farad

d. coulomb

592. A substance that attracts pieces of iron

a. conductor

b. semiconductor

c. magnet

d. all of the above

593. The phenomenon by which a substance attracts pieces of iron

a. magnetism

b. electromagnetism

c. naturalism

d. materialism

594. Which of the following is a natural magnet?

a. steel

b. magnesia

c. lodestone

d. soft iron

595. Defined as the pole which when placed in air from a similar and equal pole repels it with a force of 1/(4*pi*Uo)newtons

a. north pole

b. south pole

c. unit pole

d. magnetic pole

596. The point in a magnet where the intensity of magnetic lines of force is maximum

a. magnetic pole

b. south pole

c. north pole

d. unit pole

597. The straight line passing through the two poles of a magnet is called

a. real axis

b. Cartesian axis

c. magnetic axis

d. imaginary axis

598. The branch of engineering which deals with the magnetic field of electric current is known as

a. magnetism

b. electromagnetism

c. electrical engineering

d. electronics engineering

599. The space outside the magnet where its poles have a force of attraction or repulsion on magnetic pole is called

a. magnetic field

b. electric field

c. electromagnetic field

d. free space field

600. The total number of magnetic lines of force in a magnetic field is called

a. magnetic flux

b. magnetic flux density

c. magnetic flux intensity

d. magnetic potential

601. The phenomenon by which a magnetic substance becomes a magnet when it is placed near a magnet

a. magnetic effect

b. magnetic phenomenon

c. magnetic induction

d. electromagnetic induction

602. Which of the following magnetic materials which can be easily magnetized in both directions?

a. soft magnetic materials

b. hard magnetic materials

c. high hysteresis loss materials

d. low hysteresis loss materials

603. Which of the following materials has permeability slightly less than that of free space?

a. paramagnetic

b. non-magnetic

c. ferromagnetic

d. diamagnetic

604. Materials whose permeabilities are slightly greater than that of free space

a. paramagnetic

b. non-magnetic

c. ferromagnetic

d. diamagnetic

605. Materials that have very high permeabilities (hundred and even thousand times that of free space).

a. paramagnetic

b. non-magnetic

c. ferromagnetic

d. diamagnetic

606. The current of the electric circuit is analogous to which quantity of a magnetic circuit.

a. mmf

b. flux

c. flux density

d. reluctivity

607. What is the diameter of an atom?

a. about 10^-10 m

b. about 10^-10 cm

c. about 10^-10 mm

d. about 10^-10 um

608. Defined as a closed path in which magnetic induction or flux flows.

a. electric circuit

b. magnetic circuit

c. electronic circuit

d. electromagnetic circuit

609. The force which sets up or tends to set up magnetic flux in a magnetic circuit

a. dynamic force

b. electromotive force

c. potential difference

d. magnetomotive force

610. Referred to as the specific reluctance of a material.

a. resistivity

b. reluctivity

c. conductivity

d. permeability

611. The property of a material which opposes the creation of a magnetic flux in it.

a. resistance

b. reluctance

c. permeance

d. conductance

612. It is the reciprocal of reluctance and implies the ease of readiness with which magnetic flux is developed

a. resistance

b. conductance

c. permeance

d. inductance

613. The ability of a material to conduct magnetic flux through it.

a. permittivity

b. reluctivity

c. conductivity

d. permeability

614. The ratio of the permeability of a material to the permeability of air or vacuum.

a. relative permeability

b. relative permittivity

c. relative conductivity

d. relative reluctivity

615. Permeance is analogous to

a. conductance

b. reluctance

c. admittance

d. resistance

616. The property of the magnetic materials of retaining magnetism after withdrawal of the magnetizing force is known as

a. retentivity

b. reluctivity

c. resistivity

d. conductivity

617. The quantity of magnetism retained by a magnetic material after withdrawal of the magnetizing force is known as

a. leftover magnetism

b. hysteresis

c. residual magnetism

d. coercivity

618. The amount of magnetizing force to counter balance the residual magnetism of a magnetic material is referred to as

a. reluctivity

b. susceptibility

c. coercivity

d. retentivity

619. The ratio of the total flux (flux iron path) to the useful flux (flux in air gap).

a. leakage flux

b. leakage current

c. leakage coefficient

d. leakage factor

620. Defined as the number of lines per unit area through any substance in a plane at right angles to the lines of force

a. flux

b. flux lines

c. flux density

d. flux intensity

621. Defined as the flux density produced in it due to its own induced magnetism

a. magnetic field intensity

b. electric field intensity

c. electromagnetic field intensity

d. intensity magnetization

622. The force acting on a unit n-pole placed at that point is called

a. magnetic field intensity

b. electric field intensity

c. electromagnetic field intensity

d. intensity magnetization

623. The ratio between the intensity of magnetization produced in substance to the magnetizing force producing it

a. magnetic reluctivity

b. magnetic resistivity

c. magnetic susceptibility

d. magnetic conductivity

624. The lagging effect between flux density of the material and the magnetizing force applied.

a. permeance

b. eddy current

c. hysteresis

d. reluctance

625. Refers to the magnetic lines of force

a. flux

b. hysteresis

c. current

d. magnetomotive force

626. Refers to the non-metallic materials that have the ferromagnetic properties of iron.

a. ferrites

b. ferromagnetic

c. diamagnetic

d. paramagnetic

627. The air space between poles of magnets

a. air gap

b. free space

c. vacuum

d. atmosphere

628. One that has magnetic poles produced by internal atomic structure with no external current necessary

a. diamagnetic

b. permanent magnet

c. paramagnetic

d. electromagnetic

629. Magnetic fields of the earth as a huge magnet with north and south poles.

a. diamagnetic

b. ferromagnetic

c. terrestrial magnetism

d. terrestrial ferromagnetism

630. Used to maintain strength of magnetic field.

a. Container

b. Air gap

c. Keeper

d. Source

631. All magnetic field originates from

a. moving electric charge

b. iron atoms

c. magnetic domain

d. permanent magnets

632. Magnetic fields do not interact with

a. moving permanent magnets

b. stationary permanent magnets

c. moving electric charges

d. stationary electric charges

633. The magnetic field inside a solenoid

a. is zero

b. is uniform

c. increases with distance from the axis

d. decreases with distance from the axis

634. When the ferromagnetic substance is inserted in a current-carrying solenoid, the magnetic field is

a. greatly decreased

b. greatly increased

c. slightly decreased

d. slightly increased

635. The magnetic field of a bar magnet most closely resembles that of

a. a horseshoe magnet

b. a straight current-carrying wire

c. a stream of electrons moving parallel to one another

d. a current-carrying wire loop

636. The magnetic field of a magnetized iron bar when strongly heated

a. becomes weaker

b. becomes stronger

c. reverses direction

d. is unchanged

637. A permanent magnet does not exert force on

a. an unmagnetized iron bar

b. a magnetized iron bar

c. a moving electric charge

d. a stationary electric charge

638. A current is flowing east along a power line. If the earth's field is neglected, the direction of the magnetic field below it is

a. north

b. south

c. east

d. west

639. The emf produced in a wire by its motion across a magnetic field does not depend upon

a. the diameter of the wire

b. the length of the wire

c. the orientation of the wire

d. the flux density of the field

640. The induced emf in a wire loop that is moved parallel to a uniform magnetic field is

a. zero

b. dependent on the area of the loop

c. dependent on the shape of the loop

d. dependent on the magnitude of the field

641. When a wire loop is rotated in a magnetic field, the direction of the induced emf changes one in every _____ revolution.

a. 1/3

b. 1/2

c. 1/4

d. 2/3

642. The magnetic flux through a wire loop in a magnetic field does not depend on

a. the area of the loop

b. the magnitude of the loop

c. the shape of the loop

d. the angle between the plane of the loop and the direction

643. Steel is hard to magnetize because of its

a. low permeability

b. high permeability

c. high density

d. high retentivity

644. Paramagnetic substance has a relative permeability of

a. slightly less than one

b. equal to one

c. slightly greater than one

d. very much greater than one

645. A group of magnetically aligned atoms is called

a. range

b. lattice

c. domain

d. crystal

646. The force between two magnetic poles varies with distance between them. The variation is _____ to the square of that distance

a. equal

b. greater than

c. directly proportional

d. inversely proportional

647. Permeability means

a. the conductivity of the material for magnetic lines of force

b. the magnetization test in the material after exciting field has been removed

c. the strength of an electromagnet

d. the strength of the permanent magnet

648. _____ is an electromagnet with its core in the form of a close magnetic ring.

a. solenoid

b. paraboloid

c. toroid

d. cycloid

649. A magnetic material loses its ferromagnetic properties at a point called

a. curie temperature

b. inferred absolute temperature

c. room temperature

d. absolute temperature

650. Small voltages generated by a conductor with current in an external magnetic field.

a. skin effect

b. magnetic effect

c. hall effect

d. flywheel effect

651. The emission of electrons from hot bodies is called

a. radiation effect

b. Edison effect

c. skin effect

d. hall effect

652. The ability of a mechanically stressed ferromagnetic wire to recognize rapid switching of magnetization when subjected to a dc magnetic field.

a. Wartheim effect

b. Wiedemann effect

c. Wiegand effect

d. Edison effect

653. An effect which is generally used in the gaussmeter to measure flux density.

a. skin effect

b. magnetic effect

c. hall effect

d. flywheel effect

654. The contribution to the ionization in an ionization chamber by electrons liberated from the walls.

a. skin effect

b. wall effect

c. Hall effect

d. Edison effect

655. The tiniest element of matter.

a. atom

b. proton

c. electron

d. neutron

656. All matters (gas, liquid, and solid) are composed of

a. neutrons

b. particles

c. electrons

d. atoms

657. The simplest type of atom to exist is the _____ atom.

a. helium

b. hydrogen

c. boron

d. oxygen

658. What revolves around the positive nucleus in a definite orbit?

a. atom

b. proton

c. electron

d. neutron

659. The uncharged particles which have no effect on its atomic charge?

a. nucleons

b. electrons

c. protons

d. neutrons

660. The diameter of a hydrogen atom is approximately _____ cm

a. 1.1 x 10^-6

b. 1.1 x 10^-7

c. 1.1 x 10^-8

d. 1.1 x 10^-9

661. The K shell or the first shell has how many permissible number of orbiting electrons?

a. 1

b. 2

c. 3

d. 4

662. Germanium atom has _____ protons and _____ electrons.

a. 32, 32

b. 32, 42

c. 42, 32

d. 34, 34

663. A germanium atom has an atomic weight of 72. How many neutrons are these?

a. 32

b. 40

c. 34

d. 36

664. How many neutrons does a copper atom have?

a. 32

b. 33

c. 34

d. 29

665. Bonding of atoms that is due to the attraction between positive ions and a group of negative ions.

a. ionic bonding

b. covalent bonding

c. electrostatic bonding

d. metallic bonding

666. An alloy of 22 percent iron and 78 percent nickel.

a. permalloy

b. alnico

c. constantan

d. manganin

667. An alloy of 40 percent iron and 60 percent nickel.

a. alnico

b. permalloy

c. hipernik

d. manganin

668. A commercial alloy of aluminum, nickel, and iron, with cobalt, copper, and titanium added to produce about 12 grades.

a. alnico

b. brass

c. aluminum

d. constantan

669. The idea of preventing one component from affecting another through their common electric and magnetic field is referred to as

a. Hall effect

b. grounding

c. shielding

d. limiting

670. The physical motion resulting from the forces of magnetic fields is called

a. motor action

b. rotation

c. repulsion

d. torque action

671. Flux linkages equals

a. flux times area of core

b. flux times number of turns times area of core

c. flux times number of turns times length of core

d. flux times number of turns

672. Which of the following is a vector quantity?

a. magnetic potential

b. magnetic field intensity

c. magnetic permeability

d. flux density

673. Which of the following electric quantities is vector in character?

a. field

b. charge

c. energy

d. potential difference

674. The quantity 10^8 maxwells is equivalent to one

a. Weber

b. gauss

c. Gilbert

d. tesla

675. What is the unit of reluctance?

a. Maxwell

b. gauss

c. At/Wb

d. Weber

676. What is the SI unit of magnetic flux?

a. Tesla

b. Weber

c. Maxwell

d. Gauss

677. What is the unit of magnetomotive force?

a. volt

b. tesla

c. ampere-turn

d. Weber

678. What is the cgs unit of magnetomotive force?

a. Gilbert

b. Ampere-turn

c. Maxwell

d. Weber

679. The unit of flux is _____ in cgs system.

a. Tesla

b. Gilbert

c. Maxwell

d. Oersted

680. Flux density is measured in

a. Tesla

b. Weber

c. Ampere-turn

d. Maxwell

681. The customary energy unit in atomic and nuclear physics is

a. joule

b. volt-coulomb

c. electron-volt

d. watt-second

682. One ampere-turn is equivalent to _____ gilberts.

a. 1.16

b. 1.26

c. 1.36

d. 1.46

683. The magnetic flux of 2000 lines is how many in maxwells?

a. 1000

b. 2000

c. 4000

d. 8000

684. How much is the magnetic flux of 2000 lines in weber?

a. 2 x 10^-5

b. 2 x 10^-3

c. 2 x 10^5

d. 2 x 10^3

685. One Oersted (Oe) is equivalent to _____ Gb/cm.

a. 1

b. 10

c. 100

d. 1000

686. One electron volt (1 eV) is equivalent to _____ joules.

a. 1.3 x 10^-19

b. 1.4 x 10^-19

c. 1.5 x 10^-19

d. 1.6 x 10^-19

687. An electron-volt (eV) is a unit of

a. energy

b. potential difference

c. charge

d. momentum

688. The unit of electrical energy is

a. joule

b. watt-second

c. kilowatt-hour

d. all of these

689. Electrons at the outer shell are called

a. outer shell electrons

b. inner shell electrons

c. semiconductor electrons

d. valence electrons

690. Which of the following has the least number of valence electrons?

a. conductor

b. semiconductor

c. insulator

d. semi-insulator

691. A good conductor has how many valence electrons?

a. 1

b. 4

c. 2

d. 8

692. Which element has four valence electrons?

a. conductor

b. insulator

c. semiconductor

d. semi-insulator

693. A negative ion results when an atom gains an additional

a. electron

b. proton

c. neutron

d. atom

694. An atom or a group of atoms that carries a net electric charge.

a. positive ion

b. negative ion

c. ion

d. electron

695. Hysteresis refers to the _____ between flux density of the material and the magnetizing force applied.

a. leading effect

b. ratio

c. equality

d. lagging effect

696. Hydrogen is an example of a _____ material.

a. paramagnetic

b. diamagnetic

c. ferromagnetic

d. non-magnetic

697. Cobalt is an example of a _____ material.

a. paramagnetic

b. diamagnetic

c. ferromagnetic

d. non-magnetic

698. The evaporation of electrons from a heated surface is called

a. radiation

b. convection

c. thermionic emission

d. conduction

699. Electron is a Greek word for

a. amber

b. fire

c. stone

d. heat

700. Gases whose particles are charged are known as

a. conductors

b. insulators

c. gaseous conductors

d. plasma

701. What principle states that each electron in an atom must have a different set of quantum numbers?

a. inclusion principle

b. exclusion principle

c. quantum principle

d. electron principle

702. The energy stored in an electrostatic field or electromagnetic field is called

a. electromagnetic energy

b. kinetic energy

c. potential energy

d. rest energy

703. Which of the following statements is TRUE?

a. Silicon dioxide is a good conductor

b. the current carriers in conductors are valence electrons

c. for conductors, the valence electrons are strongly attracted to the nucleus

d. the valence electrons are located in the nucleus of an atom

704. How many electrons are needed in the valence orbit to give a material stability?

a. 8

b. 4

c. 6

d. 5

705. Residual magnetism refers to the flux density, which exists in the iron core when the magnetic field intensity is

a. minimized

b. reduced to zero

c. maximize

d. unity

706. Magnetic intensity is a

a. phasor quantity

b. physical quantity

c. scalar quantity

d. vector quantity

707. The core of a magnetic equipment uses a magnetic material with

a. least permeability

b. low permeability

c. moderate permeability

d. high permeability

708. Which of the following is a paramagnetic material?

a. carbon

b. copper

c. bismuth

d. oxygen

709. The permeability of permalloy is

a. very much greater than the permeability of air

b. slightly greater than permeability of air

c. slightly less than permeability of air

d. equal to the permeability of air

710. A-t/m is a unit of

a. mmf

b. emf

c. reluctance

d. magnetizing force

711. The force between two magnetic poles is _____ their poles strength.

a. equal to

b. directly proportional to

c. inversely proportional to

d. directly proportional to the square root of

712. The magnetic energy stored in an inductor is _____ current.

a. directly proportional to

b. inversely proportional to

c. directly proportional to the square of

d. inversely proportional to the square of

713. One of the main application of an air-cored choke.

a. radio frequency

b. audio frequency

c. power supply

d. power transformer

714. How is the mutual inductance between two coils decreased?

a. by using a common core

b. by moving the coils closer

c. by moving the coils apart

d. by increasing the number of turns of either coil

715. _____ bond is formed when one or more electrons in the outermost energy orbit of an atom are transferred to another.

a. ionic

b. covalent

c. metallic

d. Van der Waals

716. In electro-mechanical conversion devices like generators and motors, the reason why a small air gap is left between the rotor and stator is to

a. permit mechanical clearance

b. increase flux density in air gap

c. decrease the reluctance of magnetic path

d. complete the magnetic path

717. _____ bond is formed when electrons in the outermost energy orbits of the atoms are shared between two or more electrons.

a. ionic

b. covalent

c. metallic

d. Van der Waals

718. Why is it that the magnitude of magnetomotive force required for air gap is much greater than that required for iron part of magnetic circuit?

a. because air is a gas

b. because air has the highest relative permeability

c. because air is a conductor of magnetic flux

d. because air has the lowest relative permeability

719. What type of bond is formed when there exists some form of collective interactions between the (negatively charged) electrons and the (positively charged) nuclei in a solid?

a. ionic

b. covalent

c. metallic

d. Van der Waals

720. Permeance of a magnetic circuit is _____ the cross-sectional area of the circuit.

a. directly proportional to

b. inversely proportional to

c. dependent of

d. independent of

721. Formed when there exist distant electronic interactions between (opposite) charges present in the neighboring atoms or molecules.

a. ionic bond

b. covalent bond

c. metallic bond

d. Van der Waals bond

722. Defined as the ratio of the volume occupied by the atoms or ions in a unit cell divided by the volume of the unit cell and is used to measure the compactness of a crystal.

a. atomic packing factor (APF)

b. ionic packing ratio (IPR)

c. atomic compacting factor (ACF)

d. ionic compacting ratio (ICR)

723. A factor used to correct for electrostatic forces of the more distant ions in an ionic solid.

a. Avogadro's number

b. Planck's constant

c. Boltzmann's constant

d. Madelung constant

724. The conduction of electricity across the surface of a dielectric is called.

a. creepage

b. skin effect

c. surface effect

d. crosstalk

725. A magnetic circuit carries a flux phi(i) in the iron part and flux phi(g) in the air gap. What is the leakage coefficient?

a. phi(i) / phi(g)

b. phi(i) x phi(g)

c. phi(g) / phi(i)

d. phi(i) + phi(g)

726. A law stating that the magnetic susceptibilities of most paramagnetic substances are inversely proportional to their absolute temperatures.

a. Curie's law

b. Child's law

c. CR law

d. Curie-Weiss law

727. The reluctance of the magnetic circuit is _____ relative permeability of the material comprising the circuit.

a. directly proportional to

b. inversely proportional to

c. independent of

d. dependent of

728. A law relating between the magnetic and electric susceptibilities and the absolute temperatures which is followed by ferromagnets, antiferromagnets, non-polar ferroelectrics, anti-ferroelectrics and some paramagnets.

a. Curie's law

b. CR law

c. Child's law

d. Curie-Weiss law

729. Theory of ferromagnetic phenomena which assumes each atom is a permanent magnet which can turn freely about its center under the influence of applied fields and other magnets.

a. Ewing's theory of ferromagnetism

b. Oersted's ferromagnetism theory

c. Maxwells' magnetic theory

d. Ampere's circuital law

730. The reluctance of a magnetic circuit varies with

a. length X area

b. area / length

c. length / area

d. length + area

731. A theorem which states that an electric current flowing in a circuit produces a magnetic field at external points equivalent to that due to a magnetic shell whose bounding edge is the conductor and whose strength is equal to the strength of the current.

a. Joule's law

b. Faraday's law

c. Volta's theorem

d. Ampere's theorem

732. What is the usual value of the leakage coefficient for electrical machines?

a. 0.5 to 1

b. 1 to 5

c. 5 to 10

d. 1.15 to 1.25

733. The science of adapting electronics to aerospace flight.

a. avionics

b. aerotronics

c. aerodynamics

d. astrionics

734. The reluctance of a magnetic circuit is not dependent on which of the following?

a. number of turns of coil

b. magnetomotive force

c. flux density in the circuit

d. current in the coil

735. Another term for corona discharge.

a. lightning

b. sparking

c. aurora

d. corona effect

736. The B-H curve for _____ is a straight line passing through the origin.

a. cobalt

b. air

c. hardened steel

d. soft iron

737. The phenomenon that when an electric current passes through an arisotropic crystal, there is an absorption or liberation of heat due to the nonuniformity in the current distribution.

a. Bridgman effect

b. Corona effect

c. Dember effect

d. Destriau effect

738. The B-H curve of _____ is not a straight line.

a. air

b. wood

c. silicon steel

d. soft iron

739. If a magnetic flux cuts across 200 turns at a rate of 2 Wb/s, the induced voltage

according to Faraday's law is about

a. 400 V

b. 100 V

c. 200 V

d. 600 V

740. What is the SI unit of reluctance?

a. AT

b. AT/m

c. N/Wb

d. AT/Wb

741. A magnetizing force of 1000 At/m will produce a flux density of _____ in air.

a. 1.257 mWb/sq m

b. 0.63 Wb/sq m

c. 1.257 Wb/sq m

d. 0.63 mWb/sq m

742. Hysteresis loss can be reduced by the following.

a. increasing mmf of the circuit

b. using material of narrow hysteresis loop

c. using ferromagnetic core

d. laminating the magnetic circuit

743. The core of a transformer heats up when its primary is fed from an ac source because of

a. permeability of core

b. ferromagnetism

c. reluctance of core

d. hsyteresis loss

744. Which of the following materials has the least hysteresis loop area?

a. soft iron

b. silicon steel

c. hard steel

d. wrought iron

745. Core materials of a good relay have _____ hysteresis loop.

a. large

b. narrow

c. very large

d. very narrow

746. The magnetic materials should have a large hysteresis loss for one of the following applications.

a. transformers

b. AC motors

c. permanent magnets

d. DC generators

747. If the magnetic material is located within a coil through which alternating current (60 Hz frequency) flows, then _____ hysteresis loops will be formed every second.

a. 60

b. 120

c. 30

d. 180

748. There are how many compounds available in nature?

a. 105

b. 1000

c. 300,000

d. unlimited

749. Hysteresis is a phenomenon of _____ in a magnetic circuit.

a. setting up constant flux

b. lagging of H behind B

c. lagging of B behind H

d. leading of B ahead H

750. What is a measure of the density and sign of the electric charge at a point relative to that at some time?

a. electric potential

b. electric charge

c. electric current

d. electric intensity

751. _____ is a substance whose molecules consist of the same kind of atom.

a. mixture

b. compound

c. element

d. isotope

752. Hipernik is an alloy containing _____ iron and _____ nickel.

a. 40% ; 60 %

b. 60% ; 40 %

c. 50% ; 50 %

d. 70% ; 30 %

753. The mass of proton is _____ the mass of an electron.

a. equal to

b. about 1837 times

c. less than

d. 200 times

754. What is the maximum number of electrons that can be accommodated in the last orbit of an atom?

a. 4

b. 2

c. 8

d. 18

755. The electrons in the last orbit of an atom are called _____ electrons.

a. free

b. valence

c. bound

d. thermionic

756. If the number of valence electrons of an atom is less than 4, the substance is called

a. a conductor

b. a semiconductor

c. an insulator

d. a superconductor

757. If the number of valence electrons of an atom is more than 4, the substance is called

a. a semiconductor

b. a conductor

c. an insulator

d. a semi-insulator

758. If the number of valence electrons of an atom is exactly 4, then the substance is called

a. a semiconductor

b. a conductor

c. an insulator

d. a cryogenic conductor

759. If the number of valence electrons of an atom is less than 4, then the substance is probably

a. a metal

b. an insulator

c. a non-metal

d. a semiconductor

760. One coulomb of charge consists of _____ electrons.

a. 624 x 10^16

b. 62.4 x 10^16

c. 6.24 x 10^16

d. 0.624 x 10^16

761. A one cubic cm. of copper has how many free electrons at room temperature?

a. 80 x 10^18

b. 8.5 x 10^22

c. 20 x 10^10

d. 50 x 10^20

762. Electric current in a wire is the flow of _____ electrons.

a. free

b. valence

c. bound

d. loose

763. Electromotive force in a circuit

a. causes free electrons to flow

b. increases the circuit resistance

c. maintains circuit resistance

d. is needed to make the circuit complete

764. The resistance of a material is _____ its area of cross-section.

a. directly proportional

b. independent of

c. inversely proportional to

d. equal to

765. If the length and area of cross-section of a wire are doubled, then its resistance

a. becomes four times

b. becomes sixteen times

c. remains the same

d. becomes two times

766. A length of wire has a resistance of 10 ohms. What is the resistance of a wire of the same material three times as long and twice the cross-sectional area?

a. 30 ohms

b. 20 ohms

c. 15 ohms

d. 7 ohms

767. What is the SI unit of specific resistance or resistivity?

a. Ohm-circular mil per inch

b. Ohm-circular mil per foot

c. ohm-m

d. ohm-cm

768. The resistivity of a conductor _____ with an increase in temperature.

a. increases

b. decreases

c. remains the same

d. becomes zero

769. What is the SI unit of conductance?

a. Siemens

b. Mhos

c. Ohms

d. 1/Ohms

770. If the resistance of a material 2 m long and 2 sq m in area of cross-section is 1.6 x 10^-18, then its resistivity is

a. 3.2 x 10^-18 ohm-m

b. 1.6 x 10^-18 ohm-m

c. 0.64 x 10^-18 ohm-m

d. 0.16 x 10^-18 ohm-m

771. What is the SI unit of conductivity?

a. Ohms/m

b. Ohms-m

c. Siemens-m

d. Siemens/m

772. The temperature coefficient of resistance of conductors is

a. positive

b. zero

c. negative

d. infinite

773. The temperature coefficient of resistance of semiconductors is

a. positive

b. zero

c. negative

d. infinite

774. What determines the value of the temperature coefficient of resistance of a material?

a. length

b. cross-sectional area

c. volume

d. nature and temperature

775. The temperature coefficient of resistance of a conductor _____ with an increase in temperature.

a. increases

b. decreases

c. remains the same

d. becomes negative

776. The temperature coefficient of resistance of insulators is

a. zero

b. negative

c. positive

d. infinite

777. The temperature coefficient of resistance of eureka is

a. positive

b. negative

c. almost zero

d. infinite

778. If the value of alpha(o) of a conductor is 1/234 per degree Celsius, then the value of alpha(18) is

a. 1/218 per degree Celsius

b. 1/252 per degree Celsius

c. 1/272 per degree Celsius

d. 1/273 per degree Celsius

779. If the value of alpha(25) of a conductor is 1/255 per degree Celsius, then the value of alpha(20) is

a. 1/300 per degree Celsius

b. 1/250 per degree Celsius

c. 1/230 per degree Celsius

d. 1/260 per degree Celsius

780. If the value of alpha(50) of a conductor is 1/230 per degree Celsius, then the value of alpha(0) is

a. 1/180 per degree Celsius

b. 1/150 per degree Celsius

c. 1/280 per degree Celsius

d. 1/230 per degree Celsius

781. Ohm's law cannot be applied to which material?

a. copper

b. silver

c. silicon carbide

d. aluminum

782. What is the practical unit of electrical energy?

a. watt

b. kilowatt-hour

c. kilowatt-second

d. megawatt-hour

783. A 200-watt lamp working for 24 hours will consume approximately _____ units.

a. 50

b. 5

c. 24

d. 0.5

784. The hot resistance of an incandescent lamp is about _____ its cold resistance.

a. 10 times

b. 100 times

c. 5 times

d. 50 times

785. Under ordinary conditions, a body is considered

a. positively charged

b. neutral

c. negatively charged

d. stable

786. A positively charged body has

a. deficit of electrons

b. excess of neutrons

c. excess of electrons

d. deficit of protons

787. A negatively charged body has

a. deficit of electrons

b. excess of protons

c. excess of electrons

d. deficit of neutrons

788. This paper does not exhibit electricity because it contains the same number of

a. protons and electrons

b. neutrons and electrons

c. neutrons and positrons

d. atoms

789. What is the value of the absolute permittivity of air?

a. 8.854 uF/m

b. 8.854 x 10^-12 mF/m

c. 8.854 x 10^-12 F/m

d. 8.854 x 10^-12 uF/m

790. What is the relative permittivity of air?

a. 0

b. 1

c. 8.854 x 10^-12

d. 4*pi x 10^-7

791. If two similar charges 1 coulomb each, are placed 1 m apart in air, then the force of repulsion is

a. 8 x 10^6 N

b. 9 x 10^9 N

c. 10^6 N

d. 5 x 10^6 N

792. If the relative permittivity of a material is 10, then its permittivity is

a. 4*pi x 10^-7 F/m

b. 4*pi x 10^-6 F/m

c. 8.854 x 10^-11 F/m

d. 8.854 x 10^-12 F/m

793. The force between two charges placed a given distance apart _____ as the relative permittivity of the medium is increased.

a. increases

b. decreases

c. remains unchanged

d. becomes infinite

794. What is another name for relative permittivity?

a. dielectric strength

b. electric intensity

c. potential gradient

d. dielectric constant

795. The relation between absolute permittivity of air, epsilon(o), absolute permeability of air, mu(o), and velocity of light, c, is given by

a. mu(o) * epsilon(o) = c^2

b. mu(o) * epsilon(o) = c

c. 1/(mu(o) * epsilon(o)) = c

d. 1/(mu(o) * epsilon(o)) = c^2

796. The dielectric constant of most material lies between

a. 1 and 100

b. 10 and 20

c. 20 and 50

d. 50 and 100

797. A test charge means a charge of

a. -1 C

b. 1 electron

c. +1 C

d. -20 C

798. Electric lines of force leave or enter the charge surface at an angle of

a. 30 degrees

b. 45 degrees

c. 90 degrees

d. depending upon the angle of launch and entry

799. Electric field intensity is measured in

a. volts/meter

b. newtons/meter

c. newton-meter

d. amperes/meter

800. Electric field intensity is a _____ quantity.

a. scalar

b. phasor

c. vector

d. variable

801. Electric field intensity at a point due to a given charge _____ if the relative permittivity of the medium decreases.

a. decreases

b. remains unchanged

c. increases

d. becomes zero

802. The electric field intensity between the parallel plate capacitor is 2o N/C. If an insulating slab of relative permittivity 5 is placed between the plates, then electric field intensity will be

a. 20 N/C

b. 100 N/C

c. 4 N/C

d. 40 N/C

803. The electric field density is a _____ quantity.

a. phasor

b. vector

c. scalar

d. variable

804. The permittivity of a given material is given by one of the following formulas.

a. DE

b. E/D

c. D^2/E

d. D/E

805. Electric field intensity at a point is numerically equal to _____ at that point.

a. potential gradient

b. potential difference

c. dielectric constant

d. the force

806. Three charges of +5 C, -6 C, and +9 C are placed inside a sphere. What is the total flux passing through the surface of the sphere?

a. 8 C

b. 14 C

c. 20 C

d. -6 C

807. The potential at a point due to a charge is 15 V. If the distance is increased three times, the potential at the point will be

a. 5 V

b. 18 V

c. 45 V

d. 15 V

808. Electric potential is a _____ quantity.

a. scalar

b. phasor

c. vector

d. variable

809. The electric potential at a point in air due to a charge is 21 V. If air is replaced by a medium of relative permittivity of 3, then electric potential will be

a. 63 V

b. 21 V

c. 7 V

d. 42 V

810. The electric potential across part AB of a circuit is 5V; point A being at higher potential. If a charge of 5 C moves from a A to B, then energy released is

a. 5 joules

b. 25 joules

c. 10 joules

d. 100 joules

811. What is the other name for dielectric strength?

a. breakdown voltage

b. electric intensity

c. potential gradient

d. dielectric constant

812. Which of the following materials has the highest dielectric strength?

a. glass

b. oiled paper

c. mica

d. air

813. What is used as the insulating material or dielectric in an electric iron?

a. oiled paper

b. mica

c. paraffin

d. titanate compound

814. What is used as the dielectric material in high voltage transformers?

a. mica

b. paraffin

c. porcelain

d. oiled paper

815. One farad equals

a. 1 coulomb/volt

b. 1 newton/coulomb

c. 1 newton-meter

d. 1 volt/second/ampere

816. Which of the following is used by permanent magnets as the magnetic material?

a. iron

b. nickel

c. soft steel

d. hardened steel

817. Which of the following is used by temporary magnets as the magnetic material?

a. hardened steel

b. cobalt steel

c. soft iron

d. tungsten steel

819. What is the main advantage of temporary magnets?

a. the magnetic flux can be changed

b. hysteresis can be decreased

c. magnetic materials can be used

d. abundance of ferromagnetic material that can be temporarily magnetized

820. Permanent magnets can be found in

a. electric bells

b. earphones

c. relays

d. dynamic loudspeakers

821. Temporary magnets are commonly employed in

a. electric instruments

b. motors

c. moving coil loudspeakers

d. magnetos

822. The force between two magnetic poles is _____ their pole strengths.

a. directly proportional to

b. the sum of

c. inversely proportional to

d. the product of

823. If the distance between two magnetic poles decreases by 2 times, the force between them

a. decreases two times

b. increases four times

c. increases two times

d. decreases four times

824. The force between two magnetic poles is _____ the relative permeability of the medium.

a. directly proportional to

b. independent of

c. inversely proportional to

d. equal to

825. Two similar poles, each of 1 Wb, placed 1 m apart in air will experience a repulsive force of

a. 63000 N

b. 63 x 10^-3 N

c. 8 x 10^12 N

d. 796 kN

826. One weber of flux is equal to _____ magnetic lines of force.

a. 10^6

b. 10^10

c. 4*pi X 10^7

d. 10^8

827. The unit of flux density is

a. Wb/m

b. tesla

c. AT/m

d. N/Wb

828. What is the typical saturation flux density for most magnetic materials?

a. 4 Wb/sq m

b. 5 Wb/sq m

c. 1 Wb/ sq m

d. 2 Wb/sq m

829. Magnetic field intensity is a _____ quantity.

a. scalar

b. phasor

c. vector

d. variable

830. The force acting on a pole of 5 Wb is 25 N. What is the intensity of the magnetic field?

a. 5 N/Wb

b. 25 N/Wb

c. 125 N/Wb

d. 0.2 N/Wb

831. The relative permeability of a magnetic material is 10^5. What is its permeability?

a. 4*pi x 10^5 H/m

b. 4*pi x 10^-12 H/m

c. 4*pi x 10^-2 H/m

d. 4*pi x 10^-7 H/m

832. Which of the following has the highest permeability?

a. soft iron

b. steel

c. air

d. permalloy

833. A magnetic pole produces 5000 field lines. How much is the flux in Webers?

a. 50 x 10^-6

b. 5 x 10^-6

c. 500 x 10^-6

d. 500 x 10^-5

834. As the magnetic intensity decreases, the relative permeability of a magnetic material

a. decreases

b. remains the same

c. increases

d. becomes zero

835. The permeability of a material having a flux density of 5 Wb/sq m is 10^-5 H/m. What is the value of the magnetizing force?

a. 5 x 10^-5 N/Wb

b. 500 x 10^3 N/Wb

c. 4*pi x 10^-7 N/Wb

d. 4*pi x 10^7 N/Wb

836. Which of the following is a diamagnetic material?

a. aluminum

b. silver

c. air

d. cobalt

837. The greater percentage of materials are _____.

a. diamagnetic

b. paramagnetic

c. ferromagnetic

d. non-magnetic

838. The flux density in an air-cored coil is 10^-3 Wb/sq

m. With a cast iron core of relative permeability 100 inserted, the flux density will become.

a. 10^-3 Wb/sq m

b. 10^-2 Wb/sq m

c. 10^3 Wb/sq m

d. 0.1 Wb/sq m

839. AT/m is a unit of

a. mmf

b. magnetizing force

c. reluctance

d. magnetic flux density

840. The direction of force on a current carrying conductor placed in a magnetic field can be found by

a. cork screw rule

b. fleming's left hand rule

c. fleming's right hand rule

d. using a compass

841. When a current carrying conductor is placed in a magnetic field, the maximum force will act on the conductor when the conductor is at an angle of _____ to the magnetic field.

a. 45 deg

b. 60 deg

c. 30 deg

d. 90 deg

842. A magnetic field is

a. the current flow through space around a permanent magnet

b. the force set up when current flows through a conductor

c. the force that drives current through a resistor.

d. the force between the plates of a charged capacitor.

843. Ohm's law can be used only to a _____ circuit or component.

a. unilateral

b. exponential

c. trivalent

d. linear

844. When the current flows, the magnetic field about a conductor is in what direction?

a. the same as the current direction

b. opposite the current direction

c. omnidirectional

d. in the direction determined by the left hand rule

845. The magnetic field around the conductor is determined by the

a. size of the conductor

b. amount of current

c. current divided by the resistance

d. resistance divided by the current

846. Back emf refers to the

a. current equal to the applied emf

b. opposing emf

c. current opposing the applied emf

d. voltage opposing the applied emf

847. The magnetic flux through a coil changes. This results to the induced emf acting in a direction as to

a. oppose the change

b. aid the change

c. either oppose or aid the change

d. neither oppose nor aid the change

848. A magnetic flux of 2.5 x 10^-4 Wb through and area of 5 x 10^-4 square meters results in

a. 5 Wb of flux

b. 0.5 Tesla of flux density

c. 5 x 10^-5 Wb of flux

d. 5000 Tesla of flux density

849. If a 20 V potential is applied across a relay coil with 50 turns having 1 ohm of resistance, the total magnetomotive producing magnetic flux in the circuit is

a. 10 Wb

b. 50 T

c. 1000 A-t/m

d. 1000 A-t

850. What is the reluctance of a magnetic path having a length of 2 x 10^-3 m and cross-sectional area of 2.5 x 10^-3 sq. m. The relative permeability is 100.

a. 6366 A-t/Wb

b. 6000 A-t/Wb

c. 8 x 10^-3 A-t/Wb

d. 0.8 A-t/Wb

851. Calculate the permeability (in T/A*t/m) of a magnetic material that has a relative permeability of 300.

a. 3.78 x 10^-4

b. 3.78 x 10^-5

c. 3.78 x 10^-3

d. 3.78 x 10^-6

852. Calculate the flux density that will be produced by the field intensity of 2000 A-t/m for a permeability of 126 x 10^-6 T/A-t/m.

a. 0.252 G

b. 0.252 x 10^-2 T

c. 0.252 T

d. 0.252 x 10^-2 G

853. How many turns are needed to produce a magnetomotive force of 1000 A.t for a coil with 6 amperes?

a. 6000 turns

b. 600 turns

c. 167 turns

d. 67 turns

854. A 6-V battery is connected across a solenoid of 100 turns having a resistance of 2 ohms. Calculate the number of ampere-turns.

a. 100

b. 50

c. 300

d. 600

855. One of the solid structures in which the position of the atoms or ions are predetermined.

a. crystalline solid

b. amorphous solid

c. polycrystalline solid

d. poly-amorphous solid

856. MMF in a magnetic circuit corresponds to _____ in an electric circuit.

a. emf

b. voltage drop

c. electric field intensity

d. potential gradient

857. _____ solid has no defined crystal structure except perhaps in the arrangement of the nearest neighboring atoms or ions.

a. crystalline

b. amorphous

c. polycrystalline

d. poly-amorphous

858. Amorphous solid is also called

a. crystalline

b. non-crystalline

c. polycrystalline

d. homogenous

859. A principle that states that only two electrons with different spins are allowed to exist in a given orbit.

a. Bohr's principle

b. Pauli exclusion principle

c. Avogadro's principle

d. Coulomb's principle

860. Who discovered the relationship between magnetism and electricity that serves as the foundation for the theory of electromagnetism?

a. Luigi Galvani

b. Hans Christian Oersted

c. Andre Ampere

d. Charles Coulomb

861. Who demonstrated the theory of electromagnetic induction in 1831?

a. Michael Faraday

b. Andre Ampere

c. James Clerk Maxwell

d. Charles Coulomb

862. Who developed the electromagnetic theory of light in 1862?

a. Heinrich Rudolf Hertz

b. Wilhelm Roentgen

c. James Clerk Maxwell

d. Andre Ampere

863. Who discovered that a current-carrying conductor would move when placed in a magnetic field?

a. Michael Faraday

b. Andre Ampere

c. Hans Christian Oersted

d. Gustav Robert Kirchoff

864. Who discovered the most important electrical effects which is the magnetic effect?

a. Hans Christian Oersted

b. Sir Charles Wheatstone

c. Georg Ohm

d. James Clerk Maxwell

865. Who demonstrated that there are magnetic effects around every current-carrying conductor and that current-carrying conductors can attract and repel each other just like magnets?

a. Luigi Galvani

b. Hans Christian Oersted

c. Charles Coulomb

d. Andre Ampere

866. Who discovered superconductivity in 1911?

a. Kamerlingh Onnes

b. Alex Muller

c. Geory Bednorz

d. Charles Coulomb

867. The magnitude of the induced emf in a coil is directly proportional to the ratio of the change of flux linkages. This is known as

a. Joule's Law

b. Faraday's second law of electromagnetic induction

c. Faraday's first law of electromagnetic induction

d. Coulomb's Law

868. Whenever the flux linking a coil or current changes, an emf is induced in it. This is known as

a. Joule's Law

b. Coulomb's Law

c. Faraday's first law of electromagnetic induction

d. Faraday's second law of electromagnetic induction

869. The force of attraction or repulsion between two magnetic poles is directly proportional to their strengths is called

a. Newtons' first law

b. Faraday's first law of electromagnetic induction

c. Coulomb's first law

d. Coulomb's second law

870. Which of the following amplifiers is considered linear?

a. Class A

b. Class B

c. Class C

d. Either A or B

872. The voltage gain of a common collector configuration is

a. unity

b. zero

c. very high

d. moderate

873. A two-transistor class B amplifier is commonly called

a. push-pull amplifier

b. dual amplifier

c. symmetrical amplifier

d. differential amplifier

874. If a transistor is operated in such a way that output current flows for 160 degrees of the input signal, then it is _____ operation.

a. class A

b. class C

c. class B

d. class AB

875. Which coupling has the best frequency response?

a. direct

b. RC

c. transformer

d. transistor

876. A transistor amplifier has high output impedance because

a. emitter is heavily doped

b. collector is wider than emitter or base

c. collector has reverse bias

d. emitter has forward bias

877. Which of the following is considered an amplifier figure of merit?

a. gain-bandwidth product

b. beta(ß)

c. alpha(a)

d. temperature

878. A piece of equipment in an oscilloscope used to indicate pulse condition in a digital logic circuit.

a. probe

b. test prods

c. connector

d. logic probe

879. A linear circuit that compares two input signals and provides a digital level output depending on the relationship of the input signals.

a. comparator

b. controller

c. compressor

d. switch

880. What type of coupling is generally used in power amplifiers?

a. transformer

b. direct

c. RC

d. inductive

881. Which amplifier whose output current flows for the entire cycle?

a. Class A

b. Class B

c. Class C

d. Class AB

882. The coupling capacitor Cc must be large enough to _____ in an RC coupling scheme?

a. pass dc between stages

b. dissipate high power

c. prevent attenuation of low frequency

d. prevent attenuation of high frequency

883. What is the point of intersection of dc and ac load lines called?

a. operating point

b. cut off point

c. saturation point

d. breakdown

884. An oscillator produces _____ oscillations.

a. damped

b. modulated

c. undamped

d. sinusoidal

885. _____ is the operating point in the characteristic curve.

a. quiescent point

b. load point

c. biasing point

d. saturation point

886. Oscillators operate on the principle of

a. positive feedback

b. negative feedback

c. signal feedthrough

d. attenuation

887. In class A amplifier, the output signal is

a. distorted

b. the same as input

c. clipped

d. smaller in amplitude than the input

888. What happens if the input capacitor of a transistor amplifier is short-circuited?

a. biasing conditions will change

b. transistors will be destroyed

c. signals will not reach the base

d. biasing will stabilize

889. Which is used to establish a fixed level of current or voltage in a transistor?

a. biasing

b. loading

c. load line

d. coupling

890. Which power amplifier has the highest collector efficiency?

a. class A

b. class C

c. class B

d. class AB

891. _____ is a non-linear type of amplifier.

a. class C

b. class AB

c. class B

d. class A

892. An AF transformer is shielded to

a. keep the amplifier cool

b. prevent induction due to stray magnetic fields

c. protect from rusting

d. prevent electric shock

893. Amplitude distortion is otherwise known as _____ distortion.

a. intermodulation

b. harmonic

c. phase

d. resonant

894. What represents common-emitter small signal input resistance?

a. hie

b. hfe

c. hib

d. hoe

895. The ear is not sensitive to _____ distortion.

a. frequency

b. amplitude

c. harmonic

d. phase

896. Class C is an amplifier whose output current flows for

a. less than one half of the entire input cycle

b. the entire input cycle

c. twice the entire input cycle

d. greater than one half the entire input cycle

897. If gain without feedback and feedback factor are A and ß respectively, then gain with negative feedback is given by

a. A/(1 - Aß)

b. A/(1 + Aß)

c. (1 + Aß)/A

d. (1 + Aß) x A

898. The collector current in a common base configuration is equal to

a. alpha times emitter current plus leakage current

b. alpha times base current plus leakage current

c. beta times emitter current plus leakage current

d. beta times collector current plus leakage current

899. Which is not a basic BJT amplifier configuration?

a. common-drain

b. common-base

c. common-emitter

d. common-collector

900. The value of collector load resistance in a transistor amplifier is _____ the output impedance of the transistor.

a. equal to

b. more than

c. less than

d. not related to

901. What is the purpose of RC or transformer coupling?

a. to block ac

b. to separate bias of one stage from another

c. to increase thermal stability

d. to block dc

902. The bandwidth of a single stage amplifier is _____ that of multistage amplifier.

a. equal to

b. less than

c. more than

d. independent

903. _____ is the time taken by the electrons or holes to pass from the emitter to the collector.

a. transit time

b. recombination

c. transient time

d. duty cycle

904. To obtain good gain stability in a negative feedback amplifier, Aß is

a. equal to 1

b. very much greater than 1

c. less than 1

d. zero

905. The basic concept of the electric wave filter was originated by

a. Campbell and Wagner

b. Norton

c. Foster

d. Bode and Darlington

906. Which configuration has the lowest current gain?

a. common-base

b. common-collector

c. common-emitter

d. emitter follower

907. What transistor configuration offers no phase reversal at the output?

a. common-base

b. common-collector

c. common-emitter

d. Both A and B

908. The number of stages that can be directly coupled is limited because

a. change in temperature can cause thermal instability

b. circuit becomes heavy and costly

c. it becomes difficult to bias the circuit

d. circuit's resistance becomes too large

909. The input capacitor in an amplifier is called _____ capacitor.

a. coupling

b. stray

c. bypass

d. electrolytic

910. AC load line has a/an _____ slope compared to that of dc load line.

a. zero

b. smaller

c. bigger

d. infinite

911. A multistage amplifier uses at least how many transistor?

a. 1

b. 3

c. 4

d. 2

912. RC coupling is used for _____ amplification.

a. voltage

b. current

c. signal

d. power

913. An ammeter's ideal resistance should be

a. zero

b. unity

c. infinite

d. the same with the circuit's resistance

914. _____ is the circuit that can increase the peak-to-peak voltage, current, and power of a signal?

a. power supply

b. attenuator

c. amplifier

d. filter

915. When a non-linear distortion in an amplifier is D without feedback, with negative voltage feedback it will be

a. D/(1 + Aß)

b. (1 + Aß)/D

c. D x (1 + Aß)

d. D x (1 - Aß)

916. A tuned amplifier uses what load?

a. resistive

b. capacitive

c. LC tank

d. inductive

917. The voltage gain over mid-frequency range in an RC coupled amplifier

a. changes instantly with frequency

b. is constant

c. is independent of the coupling

d. is maximum

918. The input impedance of an amplifier _____ when negative voltage feedback is applied.

a. decreases

b. becomes zero

c. increases

d. is unchanged

919. The input impedance of an amplifier _____ when negative current feedback is applied.

a. remains unchanged

b. decreases

c. increases

d. becomes zero

920. To obtain the frequency response curve of an amplifier _____ is kept constant.

a. generator output level

b. amplifier output

c. generator frequency

d. amplifier frequency

921. A type of oscillator wherein the frequency is determined by the charge and discharge of resistor-capacitor networks used in conjunction with amplifiers or similar devices.

a. sinewave oscillator

b. beta generating circuit

c. relaxation oscillator

d. simply an oscillator

922. The driver transformer has center-tapped secondary to provide

a. forward bias to transistors of push-pull circuit

b. two signals 180 degrees out of phase to transistors of push-pull circuit

c. impedance matching

d. two signals in phase with each other

923. What is the advantage of RC coupling scheme?

a. good impedance matching

b. economy

c. high efficiency

d. simplicity

924. A type of filter which is having a single continuous transmission band with neither the upper nor the lower cut-off frequencies being zero or infinite is called

a. band stop filter

b. low pass filter

c. high pass filter

d. band pass filter

925. An instrument use to measure ones location in terms of coordinates

a. GPS

b. ILS

c. FANS

d. GSM

926. Transformer coupling is used for _____ amplification.

a. current

b. power

c. voltage

d. signal

927. What is the typical voltage of coupling capacitor Cc in RC coupling?

a. about 100 pF

b. about 0.1 µF

c. about 10 µF

d. about 0.01 µF

928. An electronic transfer from one stage to the next is termed as _____.

a. doping

b. mixing

c. coupling

d. connecting

929. An amplifier configuration where the input signal is fed to the emitter terminal and the output from the collector terminal is called

a. common base

b. common emitter

c. clipper

d. common collector

930. If the noise factor of an ideal amplifier expressed in dB, then it is

a. 0

b. 0.1

c. 1

d. 10

931. A feedback circuit is _____ frequency.

a. independent of

b. strongly dependent on

c. moderately dependent on

d. relatively dependent on

932. What is the basic purpose of applying negative feedback to an amplifier?

a. to increase gain

b. to reduce distortion

c. to keep the temperature within limits

d. to increase input signal

933. The capacitors are considered _____ in the dc equivalent circuit of a transistor amplifier.

a. short

b. partially short

c. open

d. partially open

934. Which frequency produces the highest noise factor?

a. 10 kHz

b. 500 Hz

c. 1 kHz

d. 100 Hz

935. Power amplifiers handle _____ signals.

a. very small

b. small

c. large

d. very large

936. The operating point is generally located _____ of dc load line in class A operation.

a. at the middle

b. at saturation point

c. at cut off point

d. at end point

937. Which of the following describes a common collector amplifier

a. low voltage gain

b. low current gain

c. low power gain

d. low input resistance

938. The general characteristics of a common base amplifier are

a. high voltage gain, low current gain, high power gain and very low input resistance

b. high voltage, high current gain, high power gain and low input resistance

c. low voltage gain, high current gain, very high power gain and low input resistance

d. none of the choices

939. To amplify dc signals, multistage amplifier uses what coupling?

a. RC

b. direct

c. transformer

d. resistor

940. What oscillator is used in order to produce frequencies in the microwave region?

a. Wien bridge

b. Hartley

c. Klystron

d. Crystal

941. Practically, the voltage gain of an amplifier is expressed

a. in volts unit

b. in dB unit

c. as an absolute value

d. as a whole number

942. What coupling provides maximum voltage gain?

a. RC

b. direct

c. transformer

d. resistor

943. The gain of an amplifier _____ when negative feedback is added.

a. increases

b. remains unchanged

c. reduces

d. becomes infinite

944. Feedback factor is always

a. less than 1

b. equal to 1

c. more than 1

d. zero

945. _____ operation is used for general amplification where no distortion can be tolerated.

a. class A

b. class B

c. class AB

d. class C

946. _____ operation is used either where the signal needs to be cut in half, such as in pulse detector or noise detectors or where the push-pull operation of two stages is required.

a. class A

b. class B

c. class AB

d. class C

947. _____ operation is used where a portion of a signal only is required, such as the synchronizing pulse separator of a television receiver.

a. class A

b. class B

c. class AB

d. class C

948. _____ operation has little use in general purpose amplifiers, but is used in high frequency oscillators

a. class A

b. class AB

c. class B

d. class C

949. Why is it that transformer coupling provides high frequency?

a. DC resistance is low

b. collector voltage is stepped up

c. collector voltage is stepped down

d. AC resistance is high

950. For constant-k high-pass filter, cut-off frequency (in Hz) is given by

a. 1/(4pi sqrt(LC))

b. 1/(pi sqrt(LC))

c. 1/(2pi sqrt(LC))

d. pi/ sqrt(LC)

951. Class C operation can have _____ percent efficiency.

a. 100%

b. 78.5%

c. 50%

d. 70%

952. The efficiency of class AB operation has a maximum of between _____ percent

a. 90 to 100 %

b. 60 to 80 %

c. 50 to 78.5 %

d. 40.5 to 60 %

953. Transformer coupling is generally employed when load resistance is

a. large

b. very large

c. small

d. zero

954. A dc voltage supply provides 60 V when the output is unloaded. When connected to a load the output drops to 56 V. Calculate the value of the voltage regulation.

a. 8.1%

b. 7.1%

c. 5%

d. 12%

955. Which of the following amplifier below is a choice when higher power gain is a requirement.

a. common base

b. common emitter

c. common collector

d. hybrid connection

956. The signal generator generally used in laboratories is _____ oscillator.

a. crystal

b. Wien-bridge

c. Hartley

d. phase-shift

957. A buffer amplifier is used for

a. maximum loading and minimum mismatch

b. minimum loading and minimum mismatch

c. maximum loading and maximum mismatch

d. minimum loading and maximum mismatch

958. Parasitic oscillations are caused by

a. output negative feedback

b. push-pull operation

c. poor interstage coupling

d. transistor interelectrode capacitance

959. Which is a fixed-frequency oscillator?

a. phase-shift oscillator

b. Colpitt's oscillator

c. Hartley oscillator

d. Crystal oscillator

960. The approximate operating frequency of a phase shift oscillator is given by

a. 1/(2pi sqrt(LC))

b. 1/(2piRC sqrt6)

c. 1/(2piRC)

d. 1/(29RC)

961. The frequency of the ripple voltage at the output of a full-wave rectifier at 60 cycles.

a. 120 cycles

b. 60 cycles

c. 240 cycles

d. 480 cycles

962. Cascaded amplifiers total decibel gain is equal to

a. the sum of the individual gains

b. the product of the individual gains

c. the difference of the individual gains

d. the quotient of the individual gains

963. In an LC oscillator, if the value of L is increased four times, then frequency of oscillations is

a. decreased 2 times

b. decreased 4 times

c. increased 2 times

d. increased 4 times

964. A class A power amplifier is otherwise known as

a. single ended amplifier

b. Darlington amplifier

c. symmetrical amplifier

d. differential amplifier

965. The power input to a power amplifier is _____ quantity.

a. ac

b. pulsating dc

c. dc

d. sinusoidal

966. When shock-excited, a crystal will produce alternating emf longer than an LC circuit because crystal

a. has greater mechanical strength

b. has fewer losses

c. is small-sized

d. is very rigid

967. The stability of a regulated power supply is equivalent to

a. change of output voltage over the change in supply voltage

b. change in supply voltage over the change of output voltage

c. product of the output voltage and the supply voltage

d. the difference of an output voltage to its supply voltage

968. An oscillator circuit that uses a tapped coil in the tuned circuit is called

a. Hartley

b. Colpitts

c. crystal

d. pierce

969. If you move towards an oscillating circuit, its frequency changes because of

a. hand capacitance

b. movement of body

c. noise of foot

d. stray capacitance

970. Which of the following is not a FET amplifier configuration

a. common base amplifier

b. common drain amplifier

c. common source amplifier

d. common gate amplifier

971. The number of transistor in a single stage amplifier is

a. 2

b. 3

c. 1

d. 4

972. Series current negative feedback occurs when the feedback voltage is proportional to the

a. output voltage

b. output impedance

c. output current

d. output power

973. Which of the following is NOT an oscillator requirement?

a. attenuator

b. amplifier

c. tank circuit

d. feedback

974. An amplifier with efficiency 85% is likely to be

a. class A

b. class B

c. class AB

d. class C

975. What is the phase difference between the output and input voltage of a CE amplifier?

a. 180 deg

b. 270 deg

c. 0 deg

d. 90 deg

976. Class C operation is preferred in oscillators because

a. it is more efficient

b. it gives larger outputs

c. it produces square waves

d. it increases stability

977. A type of oscillator which are composed of one or more amplifying devices with some frequency-determining networks introducing positive feedback at a particular frequency so that oscillation is sustained at that frequency.

a. sinewave oscillator

b. square-wave oscillator

c. relaxation oscillator

d. limiter

978. What is the desired input impedance of a transistor?

a. low

b. very low

c. high

d. very high

979. What is the maximum efficiency of class B?

a. 50%

b. 90%

c. 60.5%

d. 78.5%

980. When a transistor is cut off

a. maximum current flows

b. maximum voltage appears across load

c. maximum voltage appears across transistor

d. minimum current flows

981. In an LC circuit, when the capacitor energy is maximum, the inductor energy is

a. maximum

b. minimum

c. half-way between maximum and minimum

d. zero

982. What is the approximate gain of an amplifier with negative feedback?

a. the feedback factor

b. the reciprocal of feedback factor plus one

c. the reciprocal of feedback factor

d. the feedback factor plus one

983. The operating point in a transistor amplifier moves along _____ when an ac signal is applied.

a. dc load line

b. ac load line

c. both dc and ac load lines

d. cut-off

984. An oscillator converts

a. ac power into dc power

b. dc power into ac power

c. mechanical power into ac power

d. electrical power into mechanical power

985. What is the active device in a transistor oscillator?

a. LC tank circuit

b. biasing circuit

c. transistor

d. feedback circuit

986. When the collector supply is 5 V, then collector cut off voltage under dc conditions is

a. 20V

b. 10V

c. 2.5V

d. 5V

987. The common base amplifier has _____ compared to CE and CC amplifier.

a. a lower input resistance

b. a larger current gain

c. a larger voltage gain

d. a higher input resistance

988. When a FET with a lower transconductance is substituted into a FET amplifier circuit, what happens?

a. the current gain does not change

b. the voltage gain decreases

c. the circuit disamplifies

d. the input resistance decreases

989. In the zero signal conditions, a transistor sees _____ load.

a. dc

b. ac

c. both dc and ac

d. resistive

990. What is the gain of an amplifier with negative feedback if the feedback factor is 0.01?

a. 10

b. 1000

c. 100

d. 500

991. The current gain of an emitter follower is

a. equal to 1

b. greater than 1

c. less than 1

d. zero

992. The current in any branch of a transistor amplifier that is operating is

a. ac only

b. the sum of ac and dc

c. the difference of ac and dc

d. dc only

993. An ideal differential amplifiers common mode rejection ratio is

a. infinite

b. zero

c. unity

d. undetermined

994. An open fuse circuit has a resistance equal to

a. zero

b. unity

c. at least 100ohm(s) at standard temperature

d. infinity

995. What is the purpose of dc conditions in a transistor?

a. to reverse bias the emitter

b. to forward bias the emitter

c. to set up the operating point

d. to turn on the transistor

996. The ac variation at the output side of power supply circuits are called _____.

a. ripples

b. pulses

c. waves

d. filters

997. What is the purpose of emitter capacitor?

a. to forward bias the emitter

b. to reduce noise in the am

c. to avoid voltage drop in gain

d. to stabilize emitter voltage

998. A common emitter circuit is also called _____ circuit.

a. grounded emitter

b. grounded collector

c. grounded base

d. emitter follower

999. The output signal of a common-collector amplifier is always

a. larger than the input signal

b. in phase with the input signal

c. out of phase with the input signal

d. exactly equal to the input signal

1000. Calculate the ripples of the filter output if a dc and ac voltmeter is used and measures the output signal from a filter circuit of 25 Vdc and 1.5 Vrms.

a. 5%

b. 10%

c. 50%

d. 6%

1001. What is the ideal maximum voltage gain of a common collector amplifier?

a. unity

b. infinite

c. indeterminate

d. zero

1002. The output power of a transistor amplifier is more than the input power due to additional power supplied by

a. transistor

b. collector supply

c. emitter supply

d. base supply

1003. When a transistor amplifier feeds a load of low resistance, its voltage gain will be

a. low

b. very high

c. high

d. moderate

1004. The capacitors are considered _____ in the ac equivalent circuit of a transistor amplifier.

a. open

b. partially open

c. short

d. partially short

1005. For highest power gain, _____ configuration is used.

a. CC

b. CB

c. CE

d. CS

1006. What is the most important characteristic of a common collector amplifier?

a. has high input voltage

b. has high input resistance

c. has high output resistance

d. it is an amplifier circuit

1007. Which of the item below does not describe a common emitter amplifier.

a. high voltage gain

b. high current gain

c. very high power gain

d. high input resistance

1008. CC configuration is used for impedance matching because its

a. input impedance is very high

b. input impedance is very low

c. output impedance is very low

d. output impedance is zero

1009. Which of the following is the other name of the output stage in an amplifier?

a. load stage

b. audio stage

c. power stage

d. RF stage

1010. When amplifiers are cascaded

a. the gain of each amplifier is increased

b. a lower supply voltage is required

c. the overall gain is increased

d. each amplifier has to work less

1011. In a common emitter amplifier, the capacitor from emitter to ground is called the

a. coupling capacitor

b. bypass capacitor

c. decoupling capacitor

d. tuning capacitor

1012. A class A power amplifier uses _____ transistor/s.

a. 2

b. 1

c. 3

d. 4

1013. What is the maximum collector efficiency of a resistance loaded class A power amplifier?

a. 50%

b. 78.5%

c. 25%

d. 30%

1014. What is the maximum collector efficiency of a transformer coupled class A power amplifier?

a. 30%

b. 80%

c. 45%

d. 50%

1015. Class C amplifiers are used as

a. AF amplifiers

b. small signal amplifiers

c. RF amplifiers

d. IF amplifiers

1016. Find the voltage drop developed across a D'Arsonval meter movement having an internal resistance of 1 kohm(s) and a full scale deflection current of 150 microamperes.

a. 150 microvolts

b. 150 mV

c. 150 V

d. 200 mV

1017. If the capacitor from emitter to ground in a common emitter amplifier is removed, the voltage gain

a. increases

b. decreases

c. becomes erratic

d. remains the same

1018. Comparatively, power amplifier has _____ ß.

a. large

b. very large

c. small

d. very small

1019. The driver stage usually employs _____ amplifier.

a. class A power

b. class C

c. push-pull

d. class AB

1020. The push-pull circuit must use _____ operation.

a. class A

b. class B

c. class C

d. class AB

1021. A complementary-symmetry amplifier has

a. 1 PNP and 1 NPN transistor

b. 2 PNP transistors

c. 2 NPN transistors

d. 2 PNP and 2 NPN transistors

1022. Power amplifiers generally use transformer coupling because coupling provides

a. cooling of the circuit

b. distortionless output

c. impedance matching

d. good frequency response

1023. The output transformer used in a power amplifier is a/an _____ transformer.

a. 1:1 ratio

b. step-down

c. step-up

d. isolation

1024. Transformer coupling can be used in _____ amplifiers.

a. only power

b. only voltage

c. either power or voltage

d. neither power nor voltage

1025. When negative current feedback is applied to an

amplifier, its output impedance

a. increases

b. remains unchanged

c. decreases

d. becomes zero

1026. The quiescent current of a FET amplifier is

a. Ids

b. id

c. ID

d. Id

1027. The total decibel voltage gain of two cascaded voltage amplifier where individual voltage gains are 10 and 100 is

a. 20

b. 60

c. 800

d. 1000

1028. The frequency response of the combined amplifier can be compared with

a. an OR gate

b. a negative feedback amplifier

c. a positive filter

d. an AND gate

1029. Minimum interference with frequency response can be given by

a. direct coupling

b. RC coupling

c. transformer coupling

d. instrumentation and control

1030. The impedance of a load must match the impedance of the amplifier so that

a. minimum power is transferred to the load

b. the efficiency can be maintained at a low level

c. the signal-to-noise ratio is maximized

d. maximum power is transferred to the load

1031. The ratio of output rms power in watts to the input dc power in watts in the different amplifier class is called _____.

a. gain

b. amplification factor

c. efficiency

d. phase power

1032. Consider a zener diode with a slope resistance of 10ohm(s) in series with a 90ohm(s) resistor fed from dc supply containing a ripple voltage of 20 mV peak-to-peak. Compute for the ripple voltage in load.

a. 1 mVp-p

b. 2 mVp-p

c. 1 Vp-p

d. 6 mVp-p

1033. The _____ of a common collector configuration is unity.

a. voltage gain

b. current gain

c. power gain

d. input impedance

1034. Transmit time is the time taken by the electrons or holes to pass from

a. emitter to collector

b. collector to emitter

c. base to emitter

d. base to collector

1035. The _____ the voltage regulation, the better the operation of the voltage supply circuit.

a. smaller

b. bigger

c. moderate

d. biggest

1036. In transistor amplifier, what transformer is used for impedance matching?

a. step up

b. power

c. step down

d. isolation

1037. If an amplifier has a power gain of 100, then its dB gain is

a. 10

b. 40

c. 20

d. 100

1038. In order to have more voltage gain from a transistor amplifier the transistor used should have

a. thin collector

b. thin base

c. wide emitter

d. thin emitter

1039. The final stage of an amplifier uses _____ coupling.

a. direct

b. RC

c. transformer

d. impedance

1040. The largest theoretical voltage gain obtained with a common collector amplifier is

a. 100

b. 10

c. unity

d. infinite

1041. Increasing the overall Beta is an advantage of

a. clap oscillator

b. crystal oscillator

c. Darlington pair

d. CE amplifier

1042. The frequency of oscillation is _____ L and C in an LC oscillator.

a. inversely proportional to square root of

b. directly proportional to square root of

c. directly proportional to

d. independent of the values of

1043. An oscillator employs _____ feedback.

a. positive

b. negative

c. both positive and negative

d. neither positive nor negative

1044. The reason why RC coupling is not used to amplify extremely low frequencies.

a. there is considerable power loss

b. electrical size of coupling capacitor becomes very large

c. there is hum in the output

d. electrical size of coupling capacitor becomes very small

1045. Given three amplifiers with a gain of 10 and are connected in cascade. How much is the overall gain?

a. 24

b. 10,000

c. 30

d. 20

1046. A pair of filter common on high fidelity system which separate audio frequency band signals into two separate groups, where one is fed to the tweeter and the other to the woofer is called

a. equalizer

b. synthesizer

c. cross over network

d. hybrid

1047. The frequency response of transformer coupling is

a. good

b. excellent

c. poor

d. very good

1048. The simplest variable-frequency sinusoidal oscillator is

a. the complicated Colpitts circuit

b. the crystal circuit

c. the Armstrong circuit

d. the phase shift circuit

1049. Which of the following is provided by a CB transistor amplifier?

a. voltage gain

b. power gain

c. current gain

d. gain stability

1050. In the initial stages of a multistage amplifier, _____ coupling is used.

a. link

b. RC

c. transformer

d. impedance

1051. In three amplifiers are connected in a multistage arrangement, each with a voltage gain of 30; compute for the overall voltage gain?

a. 90

b. 27,000

c. 10

d. 30

1052. If Av is 50 and Ai is 200, what is the power gain of a common emitter amplifier?

a. 1,000

b. 10,000

c. 100

d. 100,000

1053. The gain of an amplifier with feedback is known as _____ gain.

a. closed loop

b. resonant

c. open loop

d. unity

1054. Negative feedback is employed in

a. oscillators

b. rectifiers

c. amplifiers

d. receivers

1055. The gain of an amplifier is expressed in dB unit because

a. it is a simple unit

b. calculations become easy

c. human ear response is logarithmic

d. it is the most appropriate unit

1056. What is the typical value of the emitter bypass capacitor Ce in a multistage amplifier?

a. about 0.1 μF

b. about 50 μF

c. about 100 pF

d. about 0.01 μF

1057. In a multistage amplifier, if the stages have R and C component only, _____ operation is apparent.

a. class B

b. class

c. class A

d. class AB

1058. In practice, what is normally varied in order to change frequency of oscillations?

a. capacitance

b. inductance

c. resistance

d. impedance

1059. What is the main consideration in the output stage of an amplifier?

a. power output

b. voltage gain

c. power gain

d. current gain

1060. Transformer coupling provides high gain because

a. transformer is very efficient

b. transformer matching can be achieved

c. transformer steps up the voltage

d. transformer steps up the current

1061. When negative voltage feedback is applied to an amplifier, its output impedance

a. remains unchanged

b. decreases

c. increases

d. becomes zero

1062. An LC oscillator cannot be used to produce _____ frequencies.

a. high

b. very high

c. audio

d. very low

1063. A transistor converts

a. dc power into ac power

b. ac power into dc power

c. high resistance into low resistance

d. low resistance into high resistance

1064. Hartley oscillator is commonly used in which of the following?

a. radio receivers

b. TV receivers

c. radio transmitters

d. CATV

1065. An oscillator oscillates due to

a. negative feedback

b. positive feedback

c. both positive and negative feedback

d. neither positive and negative feedback

1066. Generally, tuned amplifiers are operated in

a. class C

b. class A

c. class B

d. class AB

1067. A tuned amplifier is used in what application?

a. radio frequency

b. audio frequency

c. intermediate frequency

d. low frequency

1068. What is the ratio of output to input impedance of a CE amplifier?

a. very low

b. very high

c. moderate

d. approximately 1

1069. For a constant output frequency, the simplest sinusoidal oscillator circuit due to construct is _____.

a. the crystal circuit

b. the phase-shift circuit

c. the Colpitts circuits

d. the Hartley circuit

1070. The frequency stability of the oscillator output is maximum in _____ oscillator.

a. LC

b. crystal

c. phase-shift

d. Wien bridge

1071. Transformer coupling introduces what type of distortion?

a. amplitude

b. frequency

c. phase

d. intermodulation

1072. A pulsating dc applied to power amplifiers causes

a. burning of transistor

b. hum in the circuit

c. excessive forward voltage

d. excessive reverse voltage

1073. What is the disadvantage of impedance matching?

a. it gives distorted output

b. it requires a transformer

c. it gives low power output

d. it is expensive

1074. In a phase-shift oscillator, _____ RC sections are generally used.

a. 3

b. 4

c. 2

d. 5

1075. In a phase shift oscillator, what are the frequency determining elements?

a. L and C

b. R, L and C

c. R and C

d. R and L

1076. When the gain is 20 without feedback and 12 with negative feedback, feedback factor is

a. 0.033

b. 3/5

c. 5/3

d. 1/5

1077. The input impedance of which amplifier depends strongly on load resistance?

a. CE

b. CC

c. CB

d. CD

1078. What capacitors are used in transistor amplifiers?

a. paper

b. electrolytic

c. mica

d. mylar

1079. An important limitation of crystal oscillator is

a. its low output

b. its high Q

c. less availability of quartz crystal

d. its high output

1080. What type of feedback is used in Wien bridge oscillator?

a. +

b. -

c. both + and -

d. either + or –

1081. What is the most costly coupling?

a. RC coupling

b. direct

c. transformer

d. inductive

1082. Which of the following below is not a description of the two-stage amplifiers

a. the input resistance is equal to the input resistance of the first stage unless feedback is applied

b. its output resistance is equal to the output resistance of the final stage unless feedback is applied

c. its noise level is equal to the accumulated noise of the two stages, either by multiplying the noise voltage amplitudes together or by adding the noise decibel levels together

d. the output resistance is equal to the output resistance of the first stage unless feedback is applied

1083. What is the axis that connects the corners of a crystal?

a. X

b. mechanical

c. Y

d. Z

1084. What is the piezoelectric effect in a crystal?

a. voltage is developed because of mechanical stress

b. change in resistance because of temperature

c. change of frequency because of temperature

d. current is developed due to force applied

1085. The input resistance of a common emitter amplifier is affected by

a. Re, re, and ß

b. Rc and re

c. ß and re

d. a and re

1086. What is the typical Q of a crystal?

a. 100

b. 50

c. 1000

d. more than 10,000

1087. When the output of an amplifier is 10 V and 100 mV from the output is fed back to the input, feedback factor is

a. 10

b. 0.1

c. 0.01

d. 0.15

1088. Determine the attenuation in dB for a T-pad for which R1 = R2 = 40 ohm(s) and R3 = 36 ohm(s). The pad connects a 50 ohm(s) generator to a 50 ohm(s) load.

a. 9.83 dB

b. 8.93 dB

c. 10.83 dB

d. 11.93 dB

1089. _____ is usually employed at the output stage of an amplifier.

a. class A power amplifier

b. push-pull amplifier

c. pre-amplifier

d. differential amplifier

1090. Why is it that the size of a power transistor is made considerably large?

a. to provide easy handling

b. to dissipate more heat

c. to simplify construction

d. to facilitate connections

1091. When crystal frequency increases with temperature, it has _____ temperature co-efficient.

a. +

b. -

c. 0

d. infinite

1092. What is the purpose of the bypass capacitor in a common-emitter amplifier?

a. it increases voltage gain

b. it decreases voltage gain

c. it provides ac grounding

d. no effect in the circuit

1093. An emitter follower is equivalent to

a. common emitter amplifier

b. common collector amplifier

c. common base amplifier

d. hybrid connection

1094. The crystal oscillator frequency is very stable due to _____ of the crystal.

a. rigidity

b. ductility

c. high Q

d. low Q

1095. The bandwidth of an amplifier _____ when negative feedback is applied.

a. decreases

b. remains unchanged

c. becomes infinite

d. increases

1096. The term 1 + Aß in the expression for gain with negative feedback is known as

a. gain factor

b. sacrifice factor

c. feedback factor

d. quality factor

1097. Emitter follower employs _____ negative feedback.

a. 50 %

b. 25 %

c. 75 %

d. 100 %

1098. What application where one would most likely find a crystal oscillator?

a. radio transmitter

b. AF generator

c. radio receiver

d. oscilloscope

1099. What is the most important consideration in power amplifiers?

a. collector efficiency

b. biasing the circuit

c. to keep the transformer cool

d. amplifier distortion

1100. When the gain versus frequency curve of a transistor amplifier is not flat, _____ distortion is present.

a. amplitude

b. frequency

c. intermodulation

d. phase

1101. In a Colpitt's oscillator, feedback is obtained

a. by magnetic induction

b. by a tickler coil

c. from the center of split capacitors

d. from the center of split capacitors

1102. When the collector resistor in a common emitter amplifier is increased in value the voltage gain

a. increases

b. decreases

c. remains the same

d. becomes erratic

1103. The output signal of a CE amplifier is always

a. out of phase with the input signal

b. equal to the input signal

c. in phase with the input signal

d. larger than the input signal

1104. What is the purpose of capacitors in a transistor amplifier?

a. to protect the transistor

b. to cool the transistor

c. the couple or bypass ac component

d. to provide biasing

1105. What is the phase difference between voltage across collector load and signal voltage in a common emitter amplifier?

a. 0 degrees

b. 270 degrees

c. 180 degrees

d. 90 degrees

1106. When CE configuration is used for an oscillator, the voltage fed back must

a. be inverted by 180 degrees

b. be taken from a capacitor

c. have a 0 degree phase shift

d. taken from an inductor

1107. Class B operation has a maximum possible efficiency of _____ percent.

a. 100%

b. 78.5%

c. 75%

d. 2.2%

1108. The most stable sine-wave oscillator which uses piezo-electric quartz crystal.

a. Crystal oscillator

b. Wien-bridge oscillator

c. DC restorer

d. Hartley and Colpitts oscillator

1109. To sustain oscillations, the power gain of the amplifier may be

a. between 0.1 and 0.5

b. any value from 0.5 upward

c. equal to or greater than 1

d. infinite

1110. In a phase-shift oscillator, 180 degrees phase shift is obtained by

a. a transformer

b. LC tank circuit

c. three RC sections

d. three LC sections

1111. Feedback circuit usually employs _____ network.

a. resistive

b. inductive

c. capacitive

d. active

1112. Emitter follower is used for

a. impedance matching

b. voltage gain

c. current gain

d. power gain

1113. One of the items below is a characteristic of cascaded amplifiers?

a. doubled transconductance

b. total gain is lessen

c. increased overall gain

d. increased overall amplification ratio

1114. Logic analyzer is used to

a. verify the logic operation of the gates in a circuit

b. to display the fall time

c. to sample and display systems signal

d. to analyze the logic operation of the system

1115. Quartz crystal is most commonly used in crystal oscillator because

a. it is easily available

b. it has superior electrical properties

c. it is quite inexpensive

d. it is very rugged

1116. The operating frequency of a Wien-bridge oscillator is given by

a. 1/(2pi sqrt(LC))

b. 1/(2piRC)

c. 1/(4piLC)

d. 1/(29RC)

1117. Which operation gives the maximum distortion?

a. class A

b. class C

c. class B

d. class AB

1118. Low efficiency of a power amplifier results in

a. low forward bias

b. less battery consumption

c. more battery consumption

d. low power output

1119. In an LC oscillator, the frequency of oscillations is given by

a. 1/(2pi sqrt(LC))

b. 2pi/ sqrt(LC)

c. sqrt(LC)/2pi

d. 2pi/ sqrt(LC)

1120. Class A operation has a maximum possible efficiency of _____ percent

a. 100%

b. 50%

c. 75%

d. 25%

1121. Is a nucleonic sensing method employing usually one or more radioisotope sources and radiation detectors

a. Radiation sensing

b. Sonic level sensing

c. Conductivity level sensing

d. Dielectric variation sensing

1122. Concerned with the measurement of electric signals on the scalp which arise from the underlying neural activity in the brain (including synaptic sources).

a. ECG

b. EEG

c. Ultrasound

d. EKG

1123. In therapeutic radiology and in nuclear medicine, the energies of interest range from about

a. 10 to 100 keV

b. 100 to 10000 keV

c. 10000 to 100000 keV

d. 1 to 10 keV

1124. Which of the following is a four-layer diode with an anode gate and a cathode gate?

a. SCS

b. SCR

c. SBS

d. SUS

1125. _____ is basically a two terminal parallel-inverse combination of semiconductor layers that permits triggering in either direction.

a. diac

b. triac

c. quadrac

d. shockley diode

1126. What is the typical value of the interbase resistance of a UJT?

a. 20 kohm(s)

b. between 4 to 4 kohm(s)

c. 4 kohm(s)

d. between 4 to 10 kohm(s)

1127. PUT stands for

a. programmable unijunction transistor

b. programmable universal transistor

c. pulse unijunction transistor

d. pulse universal transistor

1128. Which thyristor conducts current in both direction when turned on?

a. diac

b. SCR

c. quadrac

d. SCS

1129. _____ is a 3 terminal device used to control large current to a load.

a. SCR

b. SCS

c. GTO

d. thyristor

1130. Another term for thermoelectric effect.

a. Seebeck effect

b. Hall effect

c. photoelectric effect

d. thermal effect

1131. _____ are the regions corresponding to open circuit condition for the controlled rectifier which block the flow of charge from anode to cathode.

a. forward blocking region

b. reverse blocking region

c. breakdown region

d. both A and B above

1132. The V-I characteristics of a triac in the first and third quadrants are essentially identical to those of _____ in the first quotation.

a. SCR

b. UJT

c. transistor

d. SCS

1133. When temperature increases, the inter-base resistance of a UJT

a. remains unchanged

b. increases

c. decreases

d. is zero

1134. The 3 terminals of a triac are

a. drain, source, gate

b. two main terminals and a gate terminal

c. cathode, anode, gate

d. anode, source, gate

1135. A triac is equivalent to two SCRs

a. in parallel

b. in inverse-parallel

c. in series

d. in inverse-series

1136. In diagnostic radiology and for superficial therapy purposes, the energy spectrum of radiation varies from about

a. 1 to 10 keV

b. 10 to 100 keV

c. 100 to 10000 keV

d. 10000 to 100000 keV

1137. The x-ray region of the electromagnetic spectrum has a corresponding range of wavelengths from

a. 0.1 to 0.0001 nm

b. 0.1 to 0.0001 pm

c. 0.1 to 0.0001 μm

d. 0.1 to 0.0001 mm

1138. The 3 terminals of an SCR are the

a. anode, cathode, grid

b. cathode, anode, gate

c. anode, cathode, drain

d. drain, source, gate

1139. If a body is considered as a conducting sphere of 0.5m radius, its capacitance to infinity is

a. 55 pF

b. 55 nF

c. 55 μF

d. 55 F

1140. How many semiconductor layers does an SCR have?

a. 4

b. 2

c. 3

d. 5

1141. A triac is a _____ switch.

a. unidirectional

b. mechanical

c. bidirectional

d. omnidirectional

1142. Which of the following is the normal way to turn on an SCR?

a. by breakover voltage

b. by appropriate anode current

c. by appropriate cathode current

d. by appropriate gate current

1143. A triac can pass a portion of _____ half-cycle through the load.

a. only +

b. only -

c. both + and -

d. neither + nor –

1144. A diac has how many terminals?

a. 2

b. 4

c. 3

d. 5

1145. An SCR combines the features of

a. a rectifier and resistance

b. a rectifier and capacitor

c. a rectifier and transistor

d. a rectifier and inductor

1146. Which is the control element in an SCR?

a. anode

b. cathode

c. gate

d. cathode supply

1147. How many semiconductor layers does a triac have?

a. 2

b. 4

c. 3

d. 1

1148. A diac has how many semiconductor layers?

a. 3

b. 4

c. 2

d. 5

1149. The p-type emitter of ac UJT is _____ doped.

a. lightly

b. moderately

c. heavily

d. not

1150. A diac has

a. one pn junction

b. three pn junctions

c. two pn junctions

d. four pn junctions

1151. A UJT is sometimes called _____ diode.

a. double-based

b. single-based

c. a rectifier

d. a switching

1152. A diac is _____ switch.

a. an ac

b. a mechanical

c. a dc

d. both ac and dc

1153. An effect that reduces the possibility of accidental triggering of the SCS.

a. Miller effect

b. Rate effect

c. End effect

d. Flywheel effect

1154. Which device does not have a gate terminal?

a. triac

b. SCR

c. FET

d. diac

1155. An SCR is a _____ triggered device.

a. current

b. power

c. voltage

d. noise

1156. When a UJT is turned on the resistance between emitter terminal and lower base terminal

a. remains unchanged

b. increases

c. decreases

d. becomes zero

1157. A UJT has

a. two pn junction

b. three pn junctions

c. one pn junction

d. four pn junctions

1158. The UJT may be used as

a. an amplifier

b. a rectifier

c. a sawtooth generator

d. a multivibrator

1159. Which of the following is the normal way to turn on a diac?

a. by breakover voltage

b. by gate voltage

c. by gate current

d. by anode current

1160. Essentially, power electronics deals with the control of ac power at what frequencies?

a. 20kHz

b. 1,000 kHz

c. frequencies less than 10 Hz

d. 60 Hz frequency

1161. When the emitter terminal of a UJT is open, the resistance between base-terminals is generally

a. low

b. extremely low

c. high

d. extremely high

1162. AC power in a load can be controlled by connecting

a. two SCRs in series

b. two SCRs in parallel

c. two SCRs in parallel opposition

d. two SCRs in series opposition

1163. Which equation defines the intrinsic stand off ratio (aeta) of a UJT?

a. Rb1/(Rb1+Rb2)

b. (Rb1+Rb2)/Rb1

c. (Rb1+Rb2)/Rb2

d. Rb1 + Rb2

1164. To turn off an SCR, which of the following is done?

a. reduce gate voltage to zero

b. reverse bias the gate

c. reduce anode voltage to zero

d. reduce cathode voltage to zero

1165. Control system that maintains a speed, voltage, or other variable within specified limits of a preset level.

a. controller

b. regulator

c. sensor

d. computer

1166. To turn on a UJT, the forward bias on emitter diode should be _____ the peak point voltage.

a. more than

b. less than

c. equal to

d. twice

1167. When temperature increases, the intrinsic stand off ratio

a. increases

b. decreases

c. essentially constant

d. becomes zero

1168. Dimensionless parameter of the second-order characteristic equation.

a. damping ratio

b. accuracy

c. efficiency ratio

d. transfer function ratio

1169. _____ is the ratio of two exponential functions of time.

a. transfer function

b. damping ratio

c. efficiency

d. gain

1170. An SCR whose state is controlled by the light falling upon a silicon semiconductor layer of the device.

a. SCS

b. GTO

c. thyristor

d. LASCR

1171. A diac is simply

a. a single junction

b. a three junction device

c. a triac without a gate terminal

d. an SCR

1172. What region lies between the peak point and valley point of UJT emitter characteristics?

a. saturation

b. cut-off

c. negative-resistance

d. positive resistance

1173. Refers to the application of electronic theory, technology, instrumentation and computing system to biological research and medical problems.

a. medical electronics

b. genetics electronics

c. biomedical engineering

d. biomedical electronics

1174. Which device exhibits negative resistance region?

a. diac

b. triac

c. transistor

d. UJT

1175. The UJT operates in what region after peak point?

a. cut off

b. negative resistance

c. saturation

d. positive resistance

1176. SCR is rectifier constructed of silicon material. Silicon is chosen because

a. it is the most abundant material

b. of its strength and ruggedness

c. it is much cheaper than any other material

d. of its high temperature and power capabilities

1177. A transconduction principle used primarily in optical sensors.

a. photoconductive transconduction

b. photovoltaic transconduction

c. electromagnetic transconduction

d. piezoelectric transconduction

1178. Is a solid state equivalent of gas-filled triode.

a. TRIAC

b. thyristor

c. SCR

d. SCS

1179. The supply voltage is generally _____ that of breakover voltage in an SCR.

a. equal to

b. less than

c. greater than

d. twice

1180. The triac is fundamentally a/an _____ with a gate terminal for controlling the turn-on conditions of the bilateral device in either direction.

a. SCR

b. quadrac

c. Shockley diode

d. diac

1181. When the supply voltage exceeds the breakover voltage of an SCR, it

a. starts conducting

b. stops conducting

c. conducts leakage current

d. conducts thermal current

1182. The step response of a first order system is given by

a. y(t) = A(0)

b. y(t) = A(0) + A(1)e^(s1 t) + A(2)e^(s2 t) + A(3)e^(s3 t)

c. y(t) = A(0) + A(1))e^(s1 t) + A(2)e^(s2 t)

d. y(t) = A(0) + Ae^(s t)

1183. A feedback control system in which the controlled variables is mechanical position.

a. closed-loop feedback control system

b. open-loop feedback control system

c. servomechanism

d. mechanical servomechanism

1184. What is that voltage above which the SCR enters the conduction region?

a. reverse breakover voltage

b. forward breakover voltage

c. holding voltage

d. trigger voltage

1185. A locus or path of the roots traced out on the s-plane as a parameter is changed.

a. root locus

b. hyperbola

c. parabola

d. circle

1186. A control system in which the output is related to the input by device parameters only.

a. open loop control system

b. closed loop control system

c. servomechanism

d. feedback control system

1187. What is the value of current below which the SCR switches from forward blocking region under stated conditions?

a. holding current

b. forward current

c. reverse current

d. trigger current

1188. What is the value of the zener or avalanche region of the fundamental two-layer semiconductor diode?

a. reverse breakdown voltage

b. forward breakdown voltage

c. breakdown voltage

d. breakover voltage

1189. The required gate triggering current of GTO is

a. 20 mA

b. 10 mA

c. 30 mA

d. 40 mA

1190. An automatic speed control device using the centrifugal force on rotating flyweights as the feedback element.

a. regulator

b. flywheel governor

c. field control

d. throttle valve

1191. What is the sensing element of acceleration transducer?

a. damper

b. spring

c. seismic mass

d. crystal

1192. Some areas where GTO is applicable.

a. counters

b. pulse generators

c. multivibrators

d. all of the above

1193. A Greek work which means "switch".

a. ristor

b. trans

c. thy

d. thyristor

1194. What is the typical turn-on time of an SCR?

a. 1μs

b. 5μs

c. 10μs

d. 3μs

1195. An SCR is a solid state equivalent of which tube?

a. triode

b. gas-filled triode

c. pentode

d. tetrode

1196. The gate of an SCR is _____ with respect to its cathode.

a. +

b. at zero potential

c. -

d. at infinite potential

1197. A normally operated SCR has an anode which is _____ with respect to cathode.

a. -

b. +

c. at zero potential

d. at infinite potential

1198. A device which can measure humidity directly, with a single sensing element. It is usually calibrated in terms of relative humidity.

a. hygrometer

b. tachometer

c. Venturi meter

d. hydrometer

1199. One of the most widely used sensing elements, particularly for pressure ranges higher than 2 MPa.

a. bellows

b. bourdon tube

c. capsule

d. straight tube

1200. Which of the following can change the angle of conduction in an SCR?

a. changing anode voltage

b. changing gate voltage

c. reverse biasing the gate

d. changing cathode voltage

1201. An SCR is a member of the _____ family.

a. thyrector

b. thyratron

c. thyristor

d. transistor

1202. How many pn junction does an SCR have?

a. 2

b. 4

c. 3

d. 5

1203. Which of the following is NOT a method primarily used for density sensing?

a. sonic

b. radiation

c. vibrating element

d. differential

1204. When SCR starts conducting, then _____ loses all control.

a. gate

b. anode

c. cathode

d. anode supply

1205. An SCR when turned on has a typical voltage across of

a. zero

b. 0.1 V

c. infinite

d. 1 V

1206. The typical turn off time of an SCR is about

a. 20 to 40 μs

b. 5 to 30 μs

c. 1 to 5 μs

d. 15 to 25 μs

1207. An SCR is made of what material?

a. silicon

b. carbon

c. germanium

d. gallium-arsenide

1208. ECG stands for electrocardiography while EEG stands for

a. electroextracellugraphy

b. electroemyography

c. electroencephalography

d. electrovectorcardiography

1209. Acceleration transducers are called

a. gyros

b. force transducers

c. tachometers

d. accelerometers

1210. When an SCR is compared to a switch, it is considered as a _____ switch.

a. bidirectional

b. mechanical

c. unidirectional

d. omnidirectional

1211. When the firing angle of an SCR is increased, its output

a. decreases

b. increases

c. remains unchanged

d. doubles

1212. When an SCR is OFF, the current in the circuit is

a. exactly zero

b. large leakage current

c. small leakage current

d. thermal current

1213. An SCR can exercise control over _____ of ac supply.

a. + or - half cycles

b. both + and - half cycles

c. only + half cycle

d. only - half cycle

1214. What is the most widely used attitude and attitude-rate transducers?

a. flowmeter

b. psychometer

c. gyro

d. hygrometer

1215. A sensing element which is typically made from a thin-walled tube formed into deep convolutions and sealed at one end, whose displacement can then be made to act on a transduction element.

a. diaphragm

b. bellow

c. capsule

d. bourdon tube

1216. The voltage across an SCR when it is turned on is about

a. 0.5 V

b. 0.1 V

c. 1 V

d. 5 V

1217. An SCR is made of silicon and not germanium because silicon

a. is inexpensive

b. has low leakage current

c. is mechanically strong

d. is tetravalent

1218. What is the control element of an SCR?

a. gate

b. anode

c. grid

d. cathode

1219. Which of the following is a common application of UJT?

a. amplifier

b. rectifier

c. multivibrator

d. sawtooth generator

1220. The integrated circuit was invented at Texas Instrument in 1958 by

a. Jonathan Kurtz

b. James Faug

c. Jack Kilby

d. Harold Lanche

1221. Which component cannot be fabricated into Ics?

a. diode

b. resistor

c. inductor

d. transistor

1222. The purpose of a comparator in op-amps

a. detect the occurrence of a changing input voltage

b. maintain a constant output when the dc input voltage changes

c. produce a change in output when an input voltage equals a reference voltage

d. amplify an input voltage

1223. The op-amp comparator circuit uses

a. negative feedback

b. a resistor

c. positive feedback

d. no feedback

1224. _____ is a complete electronic circuit, containing transistors, diodes, resistors, and capacitors processed on and contained entirely within a single chip of silicon.

a. integrated circuit (IC)

b. monolithic IC

c. linear IC

d. digital IC

1225. A process used to produce IC semiconductor elements.

a. alloy junction

b. mesa diffusion

c. grown junction

d. planar diffusion

1226. Which integrated circuit has more than 1,000 gates?

a. small-scale integration (SSI)

b. medium-scale integration (MSI)

c. large-scale integration (LSI)

d. very large-scale integration (VLSI)

1227. A characteristic that does not apply to an op-amp.

a. low power

b. high gain

c. high input impedance

d. low output impedance

1228. An integrator op-amp uses what element in the feedback path?

a. capacitor

b. resistor

c. inductor

d. transistor

1229. Which integrated circuit has more than 100 gates?

a. small scale integration (SSI)

b. medium scale integration (MSI)

c. large scale integration (LSI)

d. very large scale integration (VLSI)

1230. Which of the choices below are sources of output offset voltage

a. the differences in Vbe values

b. the differences in Vce values

c. the differences in transistor voltage

d. all of the choices

1231. The voltage gain of a differential amplifier

a. equal the AC collector resistance divided by two times the AC resistance of the emitter diode

b. sum of two emitter current

c. equals the difference between two base currents

d. is half of either collector current

1232. Which integrated circuit has 10 to 100 gates?

a. small-scale integration (SSI)

b. medium-scale integration (MSI)

c. large-scale integration (LSI)

d. very large-scale integration (VLSI)

1233. Integrated circuits having up to 9 gates is called

a. small-scale integration (SSI)

b. medium-scale integration (MSI)

c. large-scale integration (LSI)

d. very large-scale integration (VLSI)

1234. What is a VCO?

a. exhibits a frequency that can be varied with a dc control voltage

b. a single pole low pass filter

c. is the terminal of the op-amp where input resistors are placed

d. all of the choices

1235. The reason why integrated circuits are divided into digital and linear categories is because

a. they either possess analog or digital signals

b. they are either used as input or output components

c. up to the present these are the only two known categories

d. they are simply circuits that happen to be constructed integrally and like all circuits, are either switching type or amplifying type

1236. How is the output of a differentiator related to the input in an op-amp?

a. the output of a differentiator is proportional to the rate of change of the input

b. the output of a differentiator is inversely proportional to the rate of change of the input

c. the two parameters are not related

d. the two parameters are equal to each other

1237. I.Cs have advantages over discrete device circuits which is

a. lower cost

b. high reliability

c. smaller size

d. all of the above

1238. Dual in line package (DIP) is the most popular IC package because

a. it is low in cost

b. it is one of the tiniest packages known

c. it ruggedly resists vibration due to its solid construction

d. all of the above

1239. What is the typical input resistance of the op-amp when measured under open-loop?

a. 2 MO

b. 3 MO

c. 1.5 MO

d. 2.5 MO

1240. After assembly, the I.Cs are tested and classified as either

a. military

b. industrial

c. military or industrial

d. military and industrial

1241. For a constant input voltage to an integrator, why is the voltage across the capacitor linear?

a. capacitor does not dissipate heat

b. capacitor current is constantly changing

c. capacitor current is linear

d. capacitor current is constant

1242. Upon what principle does a relaxation oscillator operate?

a. resistors in cascade

b. the charging and discharging of a capacitor

c. the rectification process of a diode

d. switching transistors

1243. I.Cs for military and space applications are tested in the temperature range of

a. 0 C to 70 C

b. -55 C to 125 C

c. -173 C to 100 C

d. -10 C to 25 C

1244. For most commercial and industrial applications, I.Cs are tested in the temperature range of

a. 0 C to 70 C

b. -55 C to 125 C

c. -173 C to 100 C

d. -10 C to 25 C

1245. An IC op amp that combines FETs and bipolar transistors

a. BIFET

b. MOSFET

c. CMOS

d. IGFET

1246. A mass of metal attached to the case of a transistor to allow the heat to escape more easily.

a. flag

b. heat sink

c. op amp

d. photodiode

1247. Which of the following IC processes digital signals?

a. digital IC

b. discrete IC

c. linear IC

d. monolithic IC

1248. Which of the following IC processes analog signals?

a. digital IC

b. discrete IC

c. linear IC

d. monolithic IC

1249. A signal that is applied with equal strength to both inputs of a differential amplifier or an op amp.

a. common emitter circuit

b. common ratio signal

c. CMRR

d. common mode signal

1250. A basic circuit that a designer can modify to get more advanced circuits.

a. experimental

b. prototype

c. peak detector

d. loading

1251. What is the most commonly used type of linear IC?

a. 741

b. 555 timer

c. operational amplifier

d. LM340

1252. What has been considered as the industry standard of linear I.Cs?

a. 555 timer

b. 741 op amp

c. LM340

d. LM317

1253. What type of response characterizes the single pole, low pass filter?

a. flat from dc to the critical frequency

b. current downward up to the maximum frequency

c. curved upward up to the maximum frequency

d. no response characteristics

1254. Which of the item below is an advantage of a shunt regulator over a series type?

a. has an inherent current limiting

b. efficient than series regulator because of its component used

c. a non regulating device

d. none of the choices

1255. The most popular IC used in timing circuits is the

a. 555 timer

b. 741

c. LM317

d. LM340

1256. The total power dissipated by the operational amplifier is typically

a. 5 mW

b. 0.5 mW

c. 50 mW

d. 500 mW

1257. In the standard letter-number identification code of operational amplifiers, the letter prefix which normally consists of two or three letters identifies the

a. manufacturer

b. type of packaging

c. type of op amp

d. temperature range of operation

1258. An op amp circuit that has its output tied directly to the inverting input terminal is called a

a. current follower

b. inverting amplifier

c. non-inverting amplifier

d. voltage follower

1259. Most op amp circuits use

a. positive feedback

b. negative feedback

c. open loop operation

d. closed loop operation

1260. The three most common package suffix code are the following except one.

a. A

b. D

c. J

d. N

1261. What is the package suffix code for a plastic dual in line for surface mounting on a pc board?

a. D

b. J

c. N

d. P

1262. What is the approximate short circuit current output of 741 op amp?

a. 15mA

b. 25mA

c. 30mA

d. 35mA

1263. A circuit whose components are soldered or otherwise connected mechanically

a. discrete circuit

b. non discrete circuit

c. biasing circuits

d. integrated circuits

1264. MPP value in an op amp is synonymous with

a. output voltage swing

b. equal to the difference of the two supply voltages

c. the maximum unclipped peak to peak output of an amplifier

d. all of the choices

1265. What is the highest undistorted frequency out of an op amp for a given slew rate and peak voltage?

a. power bandwidth

b. cut off frequency

c. critical frequency

d. 3 dB bandwidth

1266. What is summing point in op-amps?

a. simulates mathematical integration

b. acts as a scaling differentiator

c. determines the rate of change of the integrator output voltage

d. a terminal of the op amp where the input resistors are commonly connected

1267. In terms of circuit component, what does the term pole refer to?

a. a single RL circuit

b. a single RC circuit

c. a cascaded amplifier

d. a summing amplifier

1268. What is the slew rate of a 741 op amp?

a. 0.5 V/μs

b. 1 V/μs

c. 0.5 V/ms

d. 1 V/ms

1269. What specification of an operational amplifier which tells how fast the output voltage can change?

a. frequency response

b. common mode rejection ratio

c. slew rate

d. open loop voltage gain

1270. What is the typical input bias current of a 741 op amp?

a. 70 nA

b. 80 nA

c. 90 nA

d. 100 nA

1271. The _____ of an op amp is its voltage gain when there is no negative feedback.

a. CMRR

b. unity gain

c. close loop

d. open loop

1272. The term 'monolithic' is derived from the combination of the Greek words 'monos' and 'lithos' which means

a. single element

b. single wafer

c. single stone

d. single chip

1273. A technique used to eliminate the need for inductive elements in monolithic integrated circuits.

a. projection printing

b. photolithographic

c. LC synthesis

d. RC synthesis

1274. Most linear I.Cs are low power devices with power dissipation ratings of

a. 5 W

b. 1 μW

c. less than 1 W

d. more than 1 W but less than 2 W

1275. An integrated circuit for both astable and monostable applications.

a. 741 op amp

b. discrete I.Cs

c. monolithic I.Cs

d. 555 timer

1276. Astable multivibrator is

a. a square wave clock

b. equivalent to a flip-flop

c. a one shot multivibrator

d. monostable in nature

1277. In a 5 level detector circuit

a. the noninverting input is connected to +5V

b. the input signal is limited to 5V peak value

c. the inverting input is connected to +5V

d. the input signal must be riding on a +5Vdc level

1278. To convert a summing amplifier to an averaging amplifier

a. all inputs must be of the same value

b. the ratio of Rf/R must be equal to the reciprocal of the number of inputs

c. all input resistors must be of different value

d. the ratio of Rf/R must equal to the number of inputs

1279. An oscillator is described by

a. regenerative feedback

b. no feedback

c. an integrator or differentiator

d. unity gain and zero phase shift around the feedback loop

1280. To use a comparator for zero level detection, the inverting input is connected to

a. ground

b. a positive reference voltage

c. the dc supply voltage

d. a negative reference voltage

1281. In most modern IC op amps, the 741 requires _____ power supplies.

a. 1

b. 2

c. 3

d. 4

1282. In an op amp integrator, the feedback path consist of

a. a capacitor

b. an inductor

c. a resistor and a capacitor in series

d. a resistor and capacitor in parallel

1283. Microwave I.Cs cover the range from

a. 0.5 to 15 GHz

b. 15 to 30 GHz

c. 30 to 45 GHz

d. 45 to 100 GHz

1284. Considered as the fundamental form of IC.

a. hybrid

b. MSI

c. VLSI

d. monolithic

1285. Plastic dual in line for insertion into sockets has a package suffix code of

a. N

b. P

c. both A and B

d. J

1286. What is the specific application of μA741C op amp?

a. for commercial

b. for industrial

c. for military

d. for experimental

1287. What is the most common method used for the growth of single crystals for IC fabrication?

a. epitaxial growth

b. Czochralsky pulling technique

c. film deposition

d. photolithography

1288. The charge coupled device (CCD) is a unique and versatile semiconductor structure invented in 1969 by

a. W.S. Boyle and G.E. Smith

b. W.F. Davis and R.C. Huntin

c. D. Cave and W. Blood Jr.

d. H.H Stellrecht and C.S. Meyer

1289. The value of the input voltage that switches the output of a comparator or Schmitt trigger.

a. trip point

b. firing voltage

c. threshold voltage

d. all of the choices

1290. A type of ground that appears at the inverting input of an op amp that uses negative feedback.

a. earth ground

b. equipment ground

c. true ground

d. virtual ground

1291. The Intel i486 32-bit microprocessor incorporates _____ transistors on a single chip.

a. 1 million

b. 100 thousand

c. 2 million

d. 200 thousand

1292. In IC op amps, the input bias circuit is defined as

a. the average of the two base currents

b. the total of the base currents

c. the inverse of the base currents

d. the difference of the base currents

1293. CMRR means

a. common mode rejection ratio

b. the ratio of differential voltage gain to common mode voltage gain

c. A and B choices

d. the difference between the two base voltages

1294. The typical dimension of a MOSFET in a single IC chip is

a. 4 mils x 6.5 mils

b. 2 mils x 12 mils

c. 3 mils x 4.5 mils

d. 1.5 mils x 3 mils

1295. The maximum rate that an output voltage of an op amp can change

a. slew rate

b. CMRR

c. input offset voltage

d. tail current

1296. The unwanted capacitance between connecting wires and ground

a. summer capacitor

b. stray wiring capacitance

c. biasing capacitance

d. feedback capacitance

1297. The typical dimension of a BJT in a single IC chip is

a. 4 mils x 6.5 mils

b. 2 mils x 12 mils

c. 3 mils x 4.5 mils

d. 1.5 mils x 3 mils

1298. The typical dimension of a diode in a single IC chip is

a. 4 mils x 6.5 mils

b. 2 mils x 12 mils

c. 3 mils x 4.5 mils

d. 1.5 mils x 3 mils

1299. Which of the items below is equivalent to a relaxation oscillator.

a. astable multivibrator

b. flip-flop

c. monostable multivibrator

d. bistable multivibrator

1300. The unity gain frequency of an op amp

a. is the frequency where the voltage gain of an op amp is 1

b. indicates the highest usable frequency

c. it equals the gain bandwidth product

d. all of the choices

1301. If the base 10 is called decimal number system, then base 12 is called

a. bidecimal number system

b. dodecimal number system

c. duodecimal number system

d. all of the above

1302. What is the principal method used in the fabrication of semiconductor devices for hybrid and monolithic I.Cs?

a. epitaxial growth

b. photolithographic process

c. isolation diffusion

d. planar technology

1303. The gain reduction in operational amplifier is known as

a. roll off

b. back off

c. gain off

d. attenuation

1304. The rate of gain reduction in operational amplifiers.

a. 5 dB per decade (-5 dB/decade)

b. 6 dB per decade (-6 dB/decade)

c. 10 dB per decade (-10 dB/decade)

d. 20 dB per decade (-20 dB/decade)

1305. A capacitor inside an op amp that prevents oscillations.

a. compensating capacitor

b. limiting capacitor

c. biasing capacitor

d. coupling capacitor

1306. A device that contains its own transistors, resistors, and diodes.

a. IC

b. CMOS

c. logic gates

d. all of the choices

1307. _____ provides a parameter specifying the maximum rate of change of the output when driven by a large step-input signal.

a. step rate

b. slew rate

c. step rate

d. dynamic rate

1308. The absolute maximum rating for op-amps internal power dissipation is

a. 500mW

b. 300mW

c. 200mW

d. 100mW

1309. What is the absolute maximum rating for an op amp differential input voltage?

a. ± 10V

b. ± 20V

c. ± 30V

d. ± 50V

1310. The maximum CMRR of µA741 op amp is

a. 60 dB

b. 70 dB

c. 80 dB

d. 90 dB

1311. The letter prefix LM identifies which of the following manufacturers?

a. National Semiconductor Corporation

b. Texas Instruments

c. Motorola

d. Signetics

1312. What is the letter prefix used by Fairchild semiconductor on their op amp product?

a. µA

b. FS

c. SG

d. NE

1313. Which of the following is not part of the 3 temperature-range codes of op amps for commercial, industrial and military applications?

a. -30 to 200 C

b. 0 to 70 C

c. -25 to 85 C

d. -55 to 125 C

1314. What identifies the package style that houses the op amp chip?

a. letter suffix

b. letter prefix

c. circuit designator

d. military specification code

1315. The package suffix code for ceramic dual in line is

a. J

b. D

c. N

d. P

1316. The summing amplifier has two or more inputs, and its output voltage is proportional to the _____ of the algebraic sum of its input voltages

a. positive

b. negative

c. reciprocal

d. inverse

1317. When higher power I.Cs are needed, we can use

a. monolithic I.Cs

b. thin film I.Cs

c. thick film I.Cs

d. B and C only

1318. In IC op amps, one of the most important input characteristics is the _____ which is defined as the difference between the base currents.

a. input bias current

b. input offset current

c. total base currents

d. all of the choices

1319. Monolithic I.Cs are

a. forms of discrete circuits

b. combination of thin film and thick film circuits

c. also called hybrid I.Cs

d. used for high power application

1320. A _____ is a group of cells that generate electric energy from their internal chemical reaction

a. battery

b. regulator

c. power supply

d. solar array

1321. Which of the following is the main function of a battery?

a. to provide a source of steady dc voltage of fixed polarity

b. to provide a source of steady dc voltage of variable polarity

c. to provide a source of variable dc voltage of fixed polarity

d. to provide a source of variable dc voltage of variable polarity

1322. The volt is a unit of

a. electromotive force

b. energy

c. force

d. magnetomotive force

1323. A transformer will work on

a. ac only

b. ac as well as dc

c. dc only

d. pulsating dc

1324. In a chemical cell, current is the movement of

a. positive and negative ions

b. positive charges

c. positive ions only

d. negative ions only

1325. What is the nominal output of an automotive battery having six lead-acid cells in series?

a. 12 V

b. 24 V

c. 6 V

d. 3 V

1326. The speed of a dc motor is

a. directly proportional to flux per pole

b. inversely proportional to flux per pole

c. inversely proportional to applied voltage

d. inversely proportional to armature current

1327. Low-speed alternators are driven by

a. hydraulic turbines

b. diesel engines

c. hydraulic engines

d. diesel engines

1328. High-speed alternators are driven by

a. diesel engines

b. steam turbines

c. hydraulic turbines

d. diesel engines

1329. The common 9-V flat battery for transistor radio has _____ cells connected in series.

a. twelve

b. three

c. six

d. nine

1330. For the same rating, the size of low-speed alternator is _____ that of high-speed alternator.

a. about the same as

b. less than

c. more than

d. twice

1331. Which of the following is not a secondary cell?

a. Silver-Zinc

b. Nickel-iron

c. silver oxide

d. lead-acid

1332. Which of the following is not a primary cell?

a. carbon-zinc

b. zinc chloride

c. edison cell

d. mercuric acid

1333. The brush voltage drop in a dc machine is about

a. 0.1 V

b. 2 V

c. 10 V

d. 20 V

1334. Carbon brushes are used in a dc machine because

a. carbon lubricates and polishes the commutator

b. contact resistance is decreased

c. carbon is cheap

d. carbon is abundant

1335. Considered as the main types of battery

a. lithium cell and alkaline

b. carbon-zinc dry cell and lead-sulfuric wet cell

c. leclanche cell and carbon-zinc

d. voltaic cell and lithium cell

1336. Which of the following is the main function of a dc motor?

a. to generate power

b. to change mechanical energy to electrical energy

c. to change electrical energy to mechanical energy

d. to change chemical energy to mechanical energy

1337. Which motor has the best speed regulation?

a. series

b. shunt

c. commulatively compounded

d. differentially compounded

1338. A method of converting chemical energy into electrical energy by dissolving two different conducting materials in an electrolyte.

a. battery

b. cell

c. voltaic cell

d. charging

1339. A commulatively compounded motor does not run at dangerous speed at light loads because of the presence of

a. shunt winding

b. interpoles

c. series

d. compensating windings

1340. DC shunt motors are used in those applications where _____ is required.

a. high starting torque

b. high no-load speed

c. practically constant speed

d. variable speed

1341. Galvanic cell is the other name of

a. voltaic cell

b. primary cell

c. secondary cell

d. solar cell

1342. For the same rating _____ motor has the highest starting torque.

a. shunt

b. differentially compounded

c. commulatively compounded

d. series

1343. The voltage regulation of an alternator with a power factor of 0.8 lagging is _____ at unity power factor.

a. greater than

b. the same as

c. smaller than

d. 100 %

1344. Which is the most suitable for punch presses?

a. shunt motor

b. differentially compounded motor

c. series motor

d. commulatively compounded motor

1345. In a vacuum cleaner, _____ motor is generally used.

a. shunt

b. series

c. commulatively compounded

d. differentially compounded

1346. A type of secondary cell that can be recharged but with an electrolyte that cannot be refilled.

a. sealed rechargeable cell

b. sealed secondary cell

c. leclanche cell

d. alkaline cell

1347. Silver-cadmium is a secondary cell with a nominal open-circuit voltage of

a. 1.1 V

b. 1.2 V

c. 1.5 V

d. 1.35 V

1348. Which is a variable speed motor?

a. series

b. commulatively compounded

c. shunt

d. differentially compounded

1349. The most commonly used method of speed control of a dc motor is by varying

a. voltage applied to the motor

b. field strength

c. effective number of conductors in series

d. armature circuit resistance

1350. _____ give the relative activity in forming ion charges for some of the chemical elements

a. electrochemical series

b. electrical series

c. electromotive series

d. both a and c above

1351. The ac armature winding of an alternator is

a. always star-connected

b. star-delta connected

c. generally delta-connected

d. pi-connected

1352. The air-gap in an alternator is _____ in an induction machine.

a. much shorter than

b. about the same as

c. much longer than

d. one-half than

1353. Nickel-iron cell is a secondary cell with a nominal open-circuit voltage output of 1.2 and is otherwise known as

a. leclanche cell

b. galvanic cell

c. voltaic cell

d. edison cell

1354. A dc series motor is suitable for

a. cranes

b. lathes

c. pump

d. punch presses

1355. Which is the most suitable motor for elevators?

a. series

b. differentially compounded

c. shunt

d. commulatively compounded

1356. The voltage output of a cell depends on

a. its elements

b. electromotive series

c. its electrodes

d. electrochemical series

1357. The alternators driven by _____ do not have a tendency to hunt.

a. diesel engines

b. steam turbines

c. water turbines

d. prime movers

1358. Damper windings are used in alternators to

a. prevent hunting

b. achieve synchronism

c. reduce windage losses

d. reduce eddy current loss

1359. Leclanche's cell is the other name of

a. lead-acid cell

b. zinc chloride

c. carbon-zinc cell

d. mercuric oxide

1360. The primary leakage flux links

a. primary winding only

b. secondary winding only

c. both primary and secondary windings

d. neither primary nor secondary windings

1361. Overheating of a dc motor is due to

a. insufficient end play

b. overloads

c. loose parts

d. rough commutator

1362. A small 9-V battery might be used to provide power to

a. an electric stove

b. an electronic calculator

c. a personal computer

d. a radio transmitter

1363. The frequency of the system with which several alternators are paralleled can be increased by simultaneously _____ of all generators.

a. increasing the field excitation

b. decreasing the field excitation

c. increasing the speed of prime movers

d. decreasing the speed of prime movers

1364. A transformer is an efficient device because it

a. is a static device

b. uses capacitive coupling

c. uses inductive coupling

d. uses electric coupling

1365. The amount of back emf of a shunt motor will increase when

a. the load is increased

b. the field is strengthened

c. the field is weakened

d. the load is decreased

1366. Three cells connected in series form a

a. battery

b. voltage divider

c. voltage multiplier

d. hybrid

1367. What can be found in a transformer with open-circuit test?

a. copper losses

b. turns ratio

c. total equivalent resistance

d. total equivalent leakage reactance

1368. Transformers having ratings less than 5kVA are generally

a. oil cooled

b. water cooled

c. natural air cooled

d. self-cooled

1369. An example of a rechargeable dc source is a/an

a. lithium battery

b. photovoltaic cell

c. optoisolator

d. lead-acid battery

1370. The voltage of the bus-bar to which several alternators are paralleled may be raised by simultaneously _____ of all alternators.

a. increasing field excitation

b. decreasing field excitation

c. increasing input to prime movers

d. decreasing input to prime movers

1371. The rating of an alternator is expressed in

a. kW

b. kVA

c. HP

d. kVAR

1372. Commulatively compounded motors are used in applications where _____ is required.

a. variable speed

b. poor speed regulation

c. sudden heavy loads for short duration

d. constant speed

1373. Which motor never uses belt-connected loads?

a. series

b. commulatively compounded

c. shunt

d. differentially compounded

1374. A stand-alone solar power system

a. relies on the electric utility at night

b. uses solar panels and batteries

c. requires the use of dry cells

d. needs a full-wave rectifier

1375. A transformer will have zero efficiency at

a. full-load

b. half full-load

c. no-load

d. twice the load

1376. The efficiency of a transformer will be maximum when

a. leakage reactances of the two windings are equal

b. resistances of the two windings are equal

c. copper loss is equal to constant loss

d. copper loss is zero

1377. The armature winding of a dc machine is _____ winding.

a. an open-circuit

b. a closed-circuit

c. partly open-circuit and partly closed-circuit

d. lap

1378. The speed at which a 6-pole alternator would be driven to generate 50 cycles per second is

a. 1500 rpm

b. 500 rpm

c. 1000 rpm

d. 1200 rpm

1379. A 12-V battery is rated at 48 Ah. If it must deliver an average of 2.0 A, how long will the battery last before it needs recharging?

a. 48 hours

b. 4 hours

c. 96 hours

d. 24 hours

1380. Connecting batteries of equal voltage in parallel

a. multiplies the voltage available

b. increases the internal resistance

c. reduces the power available

d. multiplies the current available

1381. A storage battery in which the electrodes are grids of lead containing lead oxides that change in composition during charging and discharging and the electrolyte is dilute sulfuric acid.

a. leclanche battery

b. nickel-cadmium battery

c. lead-acid battery

d. faure storage battery

1382. The common dry cell, which a primary cell having a carbon positive electrode and a zinc negative electrode in an electrolyte of sal ammoniac and a depolarizer.

a. leclanche cell

b. faure storage cell

c. lead-acid cell

d. lithium cell

1383. The maximum flux produced in the core of a transformer is

a. directly proportional to supply frequency

b. inversely proportional to supply frequency

c. inversely proportional to primary voltage

d. inversely proportional to secondary voltage

1384. A transformer is so designed that primary and secondary windings have

a. loose magnetic coupling

b. tight magnetic coupling

c. critical magnetic coupling

d. good electric coupling

1385. Four carbon-zinc cells in series will provide about

a. 2 Vdc

b. 6 Vdc

c. 9 Vdc

d. 8 Vdc

1386. _____ refers to a method in which the charger and the battery are always connected to each other for supplying current to the load.

a. continuous charging

b. float charging

c. infinite charging

d. on-line charging

1387. A series motor designed to operate in dc or ac.

a. shunt motor

b. series motor

c. universal motor

d. compound motor

1388. Combination of ac motor, dc generator, and exciter to provide adjustable voltage dc power to a dc motor.

a. Ward-Leonard system

b. Half-wave SCR adjustable voltage supply

c. compound motor

d. universal motor

1389. A motor takes a large current at starting because

a. the armature resistance is high

b. back emf is low

c. back emf is high

d. shunt field is producing the weak field

1390. A series motor will overspeed when

a. the load is increased

b. the armature current is opened

c. the field is opened

d. load is removed

1391. When the load on an alternator is increased, the terminal voltage increases if the load power factor is

a. unity

b. leading

c. lagging

d. zero

1392. The efficiency of the turbo-alternator _____ with increase in speed.

a. decreases

b. remains the same

c. increases

d. becomes 100%

1393. What is the output of a lead-acid cell?

a. 2.1 V

b. 1.5 V

c. 1.35 V

d. 1.25 V

1394. One of the following is a false statement.

a. storage cell has a reversible chemical reaction

b. carbon-zinc has unlimited shelf life

c. lead-acid cell is rechargeable

d. primary cell is not rechargeable

1395. In an alternator, the effect of armature reaction is minimum at power factor of

a. 0.866 lagging

b. 0.5 lagging

c. 0.866 leading

d. unity

1396. For given number of poles (>2) and armature conductors, lap winding will carry _____ a wave winding.

a. more current than

b. same current as

c. less current than

d. half the current than

1397. An 8-pole duplex lap winding will have _____ parallel paths

a. 8

b. 32

c. 4

d. 16

1398. To increase voltage output, cells are connected in

a. parallel

b. series-parallel

c. parallel-series

d. series

1399. To increase current capacity, cells are connected in

a. parallel

b. series

c. series-parallel

d. parallel-series

1400. Two things which are same for primary and secondary of a transformer are

a. ampere-turns and voltage per turn

b. resistance and leakage reactances

c. current and induced voltages

d. number of turns and power

1401. A transformer operates poorly at very low frequencies because

a. permeability of core is increased

b. magnetizing current is abnormally high

c. primary reactance is too much increased

d. permeability of core is reduced

1402. In auto transformer, the primary and secondary are _____ coupled.

a. only magnetically

b. magnetically as well as electrically

c. only electrically

d. directly

1403. A storage battery in which the plates consist of lead-antimony supporting grids covered with a lead oxide paste, immersed in weak sulfuric acid.

a. leclanche cell

b. primary cell

c. secondary battery

d. faure storage battery

1404. One of the following is a dry storage cell.

a. Leclanche cell

b. Edison cell

c. Mercury cell

d. Nickel-cadmium cell

1405. The field structure of a dc machine uses

a. salient-pole arrangement

b. non-salient pole arrangement

c. silicon steel

d. cast steel

1406. Small dc machine generally have _____ poles.

a. 4

b. 2

c. 6

d. 8

1407. The armature of a dc machine is laminated in order to reduce

a. eddy current loss

b. copper loss

c. hysteresis loss

d. frictional loss

1408. To produce an output of 7.5V, how many carbon-zinc cells are connected in series

a. 4

b. 5

c. 6

d. 3

1409. The demand for a large increase in torque of a dc series motor is met by a

a. large decrease in current

b. large increase in speed

c. large decrease in speed

d. small decrease in speed

1410. As the load increases, a _____ motor will speed up.

a. series

b. commulatively compounded

c. shunt

d. differentially compounded

1411. The flux in the core of a single-phase transformer is

a. purely alternating one

b. purely rotating one

c. partly alternating and partly rotating

d. constant

1412. When the primary of a transformer is connected to a dc supply,

a. primary draws small current

b. primary leakage resistance is increased

c. core losses are increased

d. primary may burn out

1413. A constant-source has

a. high internal resistance

b. minimum efficiency

c. minimum current capacity

d. low internal resistance

1414. If the excitation of an alternator operating in parallel with other alternators is increased above the normal value of excitation, its

a. power factor becomes more lagging

b. output current decreases

c. power factor becomes more leading

d. output kW decreases

1415. The synchronous reactance of an alternator is generally _____ armature resistance.

a. 5 times smaller than

b. 10 to 100 times greater than

c. 5 times greater than

d. 10 times smaller than

1416. DC series motors are used in those applications where _____ required.

a. high starting torque

b. low no-load speed

c. constant speed

d. variable speed

1417. A dc motor is still used in industrial applications because it

a. is cheap

b. provides fine speed control

c. is simple in construction

d. has no replacement

1418. The stator of an alternator is wound for _____ on the rotor.

a. more number of poles than

b. the same number of poles as

c. less number of poles than

d. twice the number of poles than

1419. Why are carbon brushes preferable compared to copper brushes?

a. they have longer life

b. they have lower resistance

c. are cheaper

d. they reduce sparking

1420. The synchronous reactance of an alternator _____ as the iron is saturated.

a. decreases

b. remains the same

c. increases

d. becomes doubled

1421. A 4-pole dc machine has _____ magnetic circuits.

a. 2

b. 4

c. 8

d. 6

1422. The current in armature conductors of a dc machine is

a. pure dc

b. ac

c. pulsating dc

d. pure dc plus pulsating dc

1423. The ac armature winding of an alternator operates at _____ the field winding.

a. the same voltage as

b. much higher voltage than

c. much lesser voltage than

d. half the voltage than

1424. Why are the field poles and armature of a dc machine is laminated?

a. to reduce the weight of the machine

b. to reduce eddy current

c. to decrease the speed

d. to reduce armature current

1425. The back emf or counter emf in a dc motor

a. opposes the applied voltage

b. aid the armature current

c. aids the applied voltage

d. opposes the armature current

1426. The synchronous reactance of an alternator is due to

a. leakage flux

b. armature reaction

c. dc field excitation

d. hysteresis loss

1427. Back emf in a dc motor is maximum at

a. no load

b. half full-load

c. full load

d. 3/4 full load

1428. The mechanical power developed in a dc motor is maximum when back emf is equal to _____ the applied voltage.

a. twice

b. 1/3

c. 1/2

d. ¼

1429. The core-type transformer is generally suitable for

a. high voltage and small output

b. low voltage and high output

c. high voltage and high output

d. low voltage and low output

1430. The transformer that should never have the secondary open-circuited when primary is energized is

a. power transformer

b. auto transformer

c. voltage transformer

d. current transformer

1431. The field winding of an alternator is _____ excited.

a. dc

b. ac

c. both ac and dc

d. battery

1432. The salient-pole construction for field structure of an alternator is generally used for _____ machine.

a. 2 pole

b. 8 pole

c. 4 pole

d. 6 pole

1433. When the speed of a dc motor increases, its armature current

a. increases

b. remains the same

c. decreases

d. becomes infinite

1434. The frequency of emf generated in an 8 pole alternator running at 900 rpm is

a. 50 Hz

b. 120 Hz

c. 60 Hz

d. 240 Hz

1435. In case of a 4-pole machine, 1 mechanical degree corresponds to _____ electrical degrees.

a. 2

b. 8

c. 4

d. 6

1436. The torque developed by a dc motor is directly proportional to

a. flux per pole x armature current

b. armature resistance x applied voltage

c. armature resistance x armature current

d. flux per pole x applied voltage

1437. AC machine in which the torque is produced by the interaction of ac currents in the stator and dc currents in the rotor turning in synchronism.

a. squirrel-cage motor

b. stepper motor

c. synchronous motor

d. induction motor

1438. Machine in which torque is produced by the interaction of ac currents in the stator and dc currents in the rotor turning in synchronism.

a. synchronous motor

b. induction motor

c. squirrel-cage motor

d. stepper motor

1439. The main drawback of a dc shunt generator is that

a. terminal voltage drops considerably with load

b. shunt field circuit has high resistance

c. generated voltage is small

d. it is expensive

1440. DC machines which are subjected to abrupt changes of load are provided with

a. interpole windings

b. compensating windings

c. equalizers

d. copper brushes

1441. The shaft torque in a dc motor is less than the total armature torque because of _____ in the motor

a. copper losses

b. iron and friction losses

c. field losses

d. hysteresis loss

1442. Armature reaction in a dc motor is increased

a. when the armature current increases

b. when the armature current decreases

c. when the field current increases

d. by interpoles

1443. An ideal transformer is one in which

a. has no losses and leakage reactance

b. does not work

c. has same number of primary and secondary turns

d. has the same primary and secondary voltage

1444. If a power transformer is operated at very high frequencies, then

a. primary reactance is too much increased

b. primary will draw power

c. core losses will be excessive

d. core loss is negligible

1445. With respect to the direction of rotation, interpoles on a dc motor must have the same polarity as the main poles

a. ahead of them

b. in parallel with them

c. behind them

d. beside them

1446. The open circuit test on a transformer is always made on

a. low-voltage winding

b. high-voltage winding

c. either low or high voltage windings

d. neither low or high voltage windings

1447. In the short circuit test in a transformer, winding is generally short-circuited.

a. high-voltage

b. low-voltage

c. either low or high-voltage winding

d. neither low nor high-voltage winding

1448. In a dc motor, the brushes are shifted from the mechanical neutral plane in a direction opposite to the rotation to

a. decrease speed

b. reduce sparking

c. increase speed

d. produce flat characteristics

1449. The number of cycles generated in a 6-pole alternator in one revolution is

a. 3

b. 5

c. 6

d. 2

1450. If the lagging load power factor of an alternator is decreased, the demagnetizing effect of armature reaction

a. remains the same

b. is increased

c. is decreased

d. becomes infinite

1451. In very large dc motors with severe heavy duty, armature reaction effects are corrected by

a. using interpoles only

b. using compensatory windings in addition to interpoles

c. shifting the brush position

d. fixing the brush position

1452. The amount of copper in the primary is _____ that of secondary.

a. about the same as

b. smaller than

c. greater than

d. twice

1453. The open-circuit test on a transformer gives

a. copper losses

b. iron losses

c. friction losses

d. total losses

1454. The speed of a _____ motor is practically constant.

a. commulatively compounded

b. differentially compounded

c. series

d. shunt

1455. The running speed of a dc series motor is basically determined by

a. field excitation

b. armature resistance

c. load

d. applied voltage

1456. If the excitation of an alternator operating in parallel with other alternators is decreased, its

a. power factor becomes more leading

b. output kW will change

c. power factor becomes more lagging

d. power factor becomes unity

1457. The distribution of load between two alternators operating in parallel can be changed by changing

a. phase sequence

b. field excitation of alternators

c. driving torques of prime movers

d. current direction

1458. After a shunt motor is up to speed, the speed may be increased considerably by

a. increasing field circuit resistance

b. decreasing field circuit resistance

c. increasing armature circuit resistance

d. reducing the load

1459. When the secondary of a transformer is short-circuited, the primary inductance

a. is decreased

b. remains the same

c. is increased

d. becomes zero

1460. For the same rating, _____ motor has the least starting torque.

a. commulatively compounded

b. shunt

c. series

d. differentially compounded

1461. The deciding factor in the selection of a dc motor for a particular application is its _____ characteristic.

a. speed-torque

b. torque-armature current

c. speed-armature current

d. speed

1462. The rotor of a turbo-alternator is made cylindrical in order to reduce

a. eddy current loss

b. windage losses

c. hysteresis loss

d. copper loss

1463. The disadvantage of a short-pitched coil is that

a. harmonics are introduced

b. waveform becomes non-sinusoidal

c. voltage round the coil is reduced

d. voltage round the coil is increased

1464. The demand for a large increase in torque of a dc shunt motor is met by a

a. large decrease in speed

b. large increase in current

c. large increase in speed

d. small increase in current

1465. For 20% increase in current, the motor that will give the greatest increase in torque is _____ motor.

a. shunt

b. series

c. differentially compounded

d. commulatively compounded

1466. A cell used to detect infrared radiation, either its generated voltage or its change of resistance may be used as a measure of the intensity of the radiation.

a. lead sulfide cell

b. faure storage cell

c. infrared cell

d. leclanche cell

1467. A galvanic cell resulting from difference in potential between adjacent areas on the surface of a metal immersed in an electrolyte.

a. NiCd cell

b. Lead-acid cell

c. local cell

d. Lithium cell

1468. Which motor is used to start heavy loads?

a. series

b. differentially compounded

c. shunt

d. commulatively compounded

1469. When load is removed, the motor that will run at the highest speed is the _____ motor.

a. shunt

b. commulatively compounded

c. series

d. differentially compounded

1470. The friction and windage losses in a dc motor depends upon

a. speed

b. armature current

c. flux

d. field and armature resistance

1471. If a transformer core has air gaps, then

a. reluctance of the magnetic path is decreased

b. hysteresis loss is decreased

c. magnetizing current is greatly increased

d. eddy current is increased

1472. The effect of leakage flux in a transformer is to

a. increase copper losses

b. decrease copper losses

c. cause voltage drop in the windings

d. reduce eddy current losses

1473. The iron losses in a dc motor depend upon

a. flux only

b. both flux and speed

c. speed only

d. temperature

1474. The greatest percentage of power loss in a dc motor is due to

a. windage loss

b. core loss

c. copper loss

d. friction loss

1475. Excessive sparking at the brushes may be caused due to

a. dirt on the commutator

b. misalignment of machine

c. loose coupling

d. worn bearings

1476. The temperature rise of a transformer is directly proportional to

a. apparent power

b. leakage reactance

c. reactive power

d. true power

1477. A graphical relation between the generated emf and the field current of a machine.

a. current generation curve

b. voltage generation curve

c. voltage-current curve

d. magnetization curve

1478. Majority of alternators in use have

a. revolving ac armature winding

b. stationary field type construction

c. revolving field type construction

d. stationary ac armature winding

1479. The stator of an alternator is identical to that of a

a. dc generator

b. 1-phase induction motor

c. 3-phase induction motor

d. Rosenberg generator

1480. Excessive motor vibration is caused by

a. too much brush tension

b. open armature coil

c. worn bearings

d. bent shaft

1481. Hot bearings of a dc motor may be caused by

a. poor ventilation

b. loose coupling

c. incorrect voltage

d. lack of or dirty lubricant

1482. Intermittent sparking at the brushes of a dc motor may be caused due to

a. an open armature coil

b. loose coupling

c. intermittent load

d. incorrect voltage

1483. When load on a transformer is increased, the eddy current loss

a. is decreased

b. remains the same

c. is increased

d. becomes zero

1484. The yoke of a dc machine is made of

a. silicon steel

b. aluminum

c. soft iron

d. cast steel

1485. The armature of a dc machine is made of

a. silicon steel

b. cast steel

c. wrought iron

d. soft iron

1486. The voltage per turn of the primary of a transformer is _____ the voltage per turn of the secondary

a. more than

b. the same as

c. less than

d. twice

1487. The winding of the transformer with greater number of turns will be

a. high-voltage winding

b. low-voltage winding

c. either high or low voltage winding

d. high power

1488. The coupling field between electrical and mechanical systems of a dc machine is

a. electric field

b. both electric and magnetic fields

c. magnetic field

d. electromagnetic field

1489. The real working part of a dc machine is the

a. commutator

b. armature winding

c. field winding

d. stator

1490. Which dc machines are most common?

a. 2 pole

b. 6 pole

c. 4 pole

d. 8 pole

1491. The core-type transformer provides

a. much longer magnetic path

b. lesser average length per turn

c. shorter magnetic path

d. longer magnetic path

1492. A machine with field excitation by both shunt and series windings.

a. complex machine

b. compound machine

c. universal machine

d. shunt/series machine

1493. The armature winding of a dc machine is placed on the rotor to

a. save iron

b. facilitate commutation

c. reduce losses

d. reduce armature reaction

1494. The yoke of a dc machine carries _____ pole flux.

a. 1/3 of

b. two times of

c. 1/2 of

d. 1/4 of

1495. The greatest eddy current loss occurs in the _____ of a dc machine.

a. field poles

b. commutating poles

c. yoke

d. armature

1496. The commutator pitch for a simplex lap winding is equal to

a. number of poles on the machine

b. 1

c. pole pairs

d. 2

1497. In a simplex wave winding, the number of parallel paths is equal to

a. number of poles in the machine

b. 2

c. number of pole pairs

d. 1

1498. In a practical transformer, copper losses account for how many percent of the total losses?

a. 75 %

b. 25 %

c. 85 %

d. 95 %

1499. By laminating the core of a transformer, _____ decreases.

a. leakage reactance

b. eddy current loss

c. hysteresis loss

d. copper loss

1500. The number of parallel paths in a simplex lap winding is equal to

a. 2

b. number of poles

c. number of pair of poles

d. 1

1501. In a dc machine, the number of commutator segments is equal to

a. number of conductors

b. number of coils

c. twice the number of poles

d. twice the number of coils

1502. A dc compound generator having full-load terminal voltage equal to the no-load voltage is called _____ generator.

a. under-compounded

b. flat-compounded

c. over-compounded

d. uncompounded

1503. The terminal voltage of a_____ generator varies widely with changes in load current.

a. series

b. flat-compounded

c. shunt

d. over-compounded

1504. The nature of armature winding of a dc machine is decided by

a. front pitch

b. back pitch

c. commutator pitch

d. number of coils

1505. The voltage regulation of an alternator is larger than that of a dc generator because of

a. large armature resistance

b. large leakage reactance

c. complex effects of armature reaction

d. small armature resistance

1506. High-voltage dc machines use what winding?

a. lap

b. wave

c. either lap or wave

d. open-circuit

1507. In a lap winding, the number of brushes required is equal to

a. number of poles

b. commutator pitch

c. number of pair of poles

d. number of coils

1508. What is the approximate efficiency of a large transformer?

a. 65%

b. 80%

c. 50%

d. 95%

1509. In a wave winding, the commutator pitch is approximately equal to

a. pole pitch

b. thrice the pole pitch

c. twice the pole pitch

d. half the pole pitch

1510. A triplex wave winding will have _____ parallel paths.

a. 6

b. 4

c. 2

d. 8

1511. For a given dc generator, the generated voltage depends upon

a. flux only

b. both speed and flux

c. speed only

d. armature rotation

1512. For the same rating, a dc machine has _____ an ac machine.

a. the same weight as

b. less weight than

c. more weight than

d. half the weight than

1513. Difference between the speeds of a rotating magnetic field and the associated rotor.

a. split

b. salient pole

c. slip

d. pull-out torque

1514. The field winding of a dc shunt machine usually carries _____ of the rated current of the machine.

a. 2% to 5%

b. more than 20%

c. 15% to 20%

d. less than 0.5%

1515. A separately excited dc generator is not used because

a. it is costly

b. a separate dc source is required for field circuit

c. voltage drops considerably with load

d. it is bulky

1516. The effect of armature reaction is to

a. decrease the total flux

b. make the air-gap flux uniform

c. increase the total flux

d. make the flux constant

1517. In a dc generator, armature reaction _____ pole tip

a. weakens the flux at the trailing

b. weakens the flux at the leading

c. strengthens the flux at the leading

d. strengthens the flux at the trailing

1518. The greatest percentage of heat loss in a dc machine is due to

a. eddy current loss

b. copper loss

c. hysteresis loss

d. frictional loss

1519. The size of a dc generator can be reduced by using

a. lap winding

b. high-resistance winding material

c. iron commutator

d. magnetic material of high permeability

1520. How many electrons are there in the fourth orbit of a copper electron

a. 1

b. 2

c. 3

d. 4

1521. The maximum permissible number of electrons in the third orbit is

a. 18

b. 8

c. 32

d. 2

1522. Varactor diodes are commonly used

a. as a voltage controlled capacitance

b. as a constant current source

c. as a voltage multiplier

d. as a constant voltage source

1523. The reason why electrons are not pulled into the nucleus of an atom.

a. because of the centrifugal or outward force created by their orbital motion

b. because of the force of attraction between them and the nucleus is weak

c. because they are not being attracted by the positive nucleus.

d. because of the strong bonding between them that resists any force pulling them towards the nucleus

1524. The electrons in the largest orbit travel _____ than the electrons in the smaller orbits.

a. move slowly

b. faster

c. in the same velocity

d. a little bit slower

1525. A transistor configuration with the lowest current gain

a. common base

b. common emitter

c. common collector

d. emitter-follower

1526. A semiconductor in its purest form is called

a. pure semiconductor

b. doped semiconductor

c. intrinsic semiconductor

d. extrinsic semiconductor

1527. Valence orbit is the other term for

a. outer orbit

b. 3rd orbit

c. 4th orbit

d. 2nd orbit

1528. K shell means

a. first orbit

b. 2nd orbit

c. 3rd orbit

d. 4th orbit

1529. For either germanium or silicon diodes, the barrier

potential decreases _____ for each Celsius degree rise.

a. 1 mV

b. 3 mV

c. 4 mV

d. 2 mV

1530. A diode modeling circuit which considers, the threshold voltage, average resistance and switch as the diode's equivalent circuit.

a. ideal model

b. simplified model

c. piecewise linear model

d. real model

1531. There are two mechanisms by which holes and electrons move through a silicon crystal. They are

a. covalent bond and recombination

b. diffusion and drift

c. free and charge particles

d. forward and reverse bias

1532. A semiconductor is an element with a valence of

a. 4

b. 8

c. 2

d. 1

1533. What orbit controls the electrical properties of the atom?

a. valence orbit

b. first orbit

c. fourth orbit

d. M shell

1534. _____ is a substance that contains atoms with several bands of electrons but with only one valence electron.

a. insulator

b. conductor

c. semiconductor

d. resistor

1535. Pure silicon crystal atoms contain how many valence electrons as a result of covalent bonding?

a. 1

b. 4

c. 8

d. 16

1536. The peak inverse voltage of a full wave center tapped rectifier circuit is equal to _____ of the input signal.

a. thrice the peak

b. twice the peak

c. 1/2

d. 1/3

1537. Diffusion or storage capacitance is the term used to refer to

a. the reverse bias capacitance of a diode

b. the forward bias capacitance of a diode

c. the breakdown capacitance of a diode

d. the breakdown capacitance of the rectifier

1538. What is considered as the key to electrical conductivity?

a. the number of electrons in the valence orbit

b. the number of protons in the nucleus

c. the number of neutrons in the nucleus

d. the number of protons plus the number of electrons in the atom

1539. Each atom in a silicon crystal has how many electrons in the valence orbit

a. 8

b. 32

c. 2

d. 4

1540. Lifetime is the amount of time between the creation and disappearance of a/an

a. free electron

b. proton

c. ion

d. neutron

1541. A silicon crystal is an intrinsic semiconductor

a. if every atom in the crystal is a silicon atom

b. if majority of the atoms in crystal is a silicon atom

c. if the crystal contains 14 silicon atoms

d. if the crystal is undamped

1542. At room temperature, a silicon crystal acts approximately like a/an

a. insulator

b. semiconductor

c. conductor

d. superconductor

1543. An extrinsic semiconductor is a

a. doped semiconductor

b. pure semiconductor

c. good insulator

d. good conductor

1544. _____ is associated with random motion due to thermal agitation in the movement of holes and electrons in a silicon crystal.

a. drift

b. diffusion

c. doping

d. recombination

1545. The peak inverse voltage of a half wave rectifier circuit is approximately equal to the _____ of the input signal.

a. peak amplitude

b. frequency

c. voltage sinusoidal

d. current

1546. Silicon that has been doped with a trivalent impurity is called a/an

a. p-type semiconductor

b. n-type semiconductor

c. intrinsic semiconductor

d. extrinsic semiconductor

1547. Silicon that has been doped with a heptavalent impurity is called a/an

a. p-type semiconductor

b. n-type semiconductor

c. intrinsic semiconductor

d. extrinsic semiconductor

1548. _____ is another term for a pn crystal.

a. junction diode

b. PN junction

c. diode

d. lattice

1549. An acceptor atom is also called

a. pentavalent atom

b. trivalent atom

c. minority carrier

d. majority carrier

1550. A donor atom.

a. trivalent atom

b. aluminum

c. boron

d. pentavalent atom

1551. In an n-type semiconductor, free electrons are called

a. minority carriers

b. valence electrons

c. majority carriers

d. charge carriers

1552. In an n-type semiconductor, holes are called

a. minority carriers

b. majority carriers

c. protons

d. charge carriers

1553. What is the barrier potential of germanium at 25 degrees Celsius?

a. 0.7 V

b. 0.3 V

c. 0.5 V

d. 0.4 V

1554. The barrier potential for a silicon diode at 25 degrees Celsius is approximately

a. 0.4 V

b. 0.3 V

c. 0.7 V

d. 0.5 V

1555. Each pair of positive and negative ions at the junction is called a/an

a. anion

b. positron

c. cation

d. dipole

1556. When temperature increases, barrier potential _____ .

a. remains the same

b. decreases

c. increases

d. either increases or decreases depending on the semiconductor material used

1557. Avalanche effects occurs at

a. higher reverse voltages

b. lower reverse voltages

c. higher forward voltages

d. lower forward voltages

1558. The creation of free electrons through zener effect is also known as

a. avalanche emission

b. thermionic emission

c. low-field emission

d. high-field emission

1559. Zener effect depends only on the

a. high-speed minority carriers

b. high-speed majority carriers

c. intensity of the electric field

d. intensity of the magnetic field

1560. _____ is the temperature inside the diode, right at the junction of the p and n-type materials.

a. junction temperature

b. ambient temperature

c. internal temperature

d. absolute temperature

1561. What is the input control parameter of a FET?

a. gate voltage

b. source voltage

c. drain voltage

d. gate voltage

1562. One of the important diode parameters which gives the magnitude of current the diode can handle without burning.

a. reverse saturation current

b. reverse current

c. forward current

d. forward breakdown current

1563. The maximum reverse voltage that can be applied before current surges is called

a. reverse recovery time

b. maximum junction voltage

c. forward voltage

d. reverse breakdown voltage

1564. Another name for Esaki diode

a. diac

b. hot-carrier diode

c. shockley diode

d. tunnel diode

1565. The most important application of Schottky diodes is in

a. digital computers

b. power supplies

c. amplifier circuits

d. voltage regulators

1566. A diode is a nonlinear device because

a. it produces a nonlinear graph

b. its current is not directly proportional to its voltage

c. it has a built-in barrier potential

d. it can rectify alternating current

1567. The sum of the resistances of the p-region and the n-region is called

a. junction resistance

b. extrinsic resistance

c. intrinsic resistance

d. bulk resistance

1568. What is the typical bulk resistance of rectifier diodes?

a. less than 1ohm(s)

b. greater than 1ohm(s)

c. equal to 1ohm(s)

d. it depends on the doping level

1569. The reverse bias diode capacitance is termed as

a. transition region capacitance

b. diffusion capacitance

c. storage capacitance

d. reverse capacitance

1570. The time taken by the diode to operate in the reverse condition from forward conduction.

a. maximum power time

b. reverse recovery time

c. lifetime

d. time allocation

1571. Approximately, the atomic weight of germanium is

a. 32

b. 28.09

c. 72.6

d. 16

1572. Atomic weight of silicon at 300 K is

a. 28.09

b. 72.6

c. 5.32

d. 16

1573. An LED and a phototransistor is equivalent to a/an

a. thermocouple

b. FET

c. optocoupler

d. regulator

1574. Optocoupler is otherwise known as

a. laser

b. photodiodes

c. optoisolator

d. photoconductive cell

1575. When the emitter junction is forward biased while the collector junction is reverse biased, the transistor is at _____ region.

a. cut-off

b. saturation

c. active

d. breakdown

1576. When both the emitter and collector junction are forward biased, the transistor is said to be at _____ region.

a. active

b. cut-off

c. breakdown

d. saturation

1577. An equivalent circuit of a diode in which it is represented as a switch in series with a barrier potential.

a. first approximation

b. second approximation

c. third approximation

d. fourth approximation

1578. Which of the following is the equivalent circuit for a diode for third approximation?

a. a switch only

b. a switch in series with a battery in series with a resistance

c. a switch in series with a battery

d. a switch in series with a resistance

1579. A silicon crystal is a/an _____ of a semiconductor if every atom in the crystal is a silicon atom.

a. extrinsic

b. intrinsic

c. p-type

d. n-type

1580. With pnp voltage divider bias, you must use

a. ground

b. negative power supplies

c. positive power supplies

d. resistors

1581. Two pn silicon diodes are connected in series opposing. A 5V voltage is impressed upon them. Find the voltage across each junction at room temperature when nVt - 0.052 V.

a. 0.236 V, 3.2 V

b. 4.764 V, 0.236 V

c. 0.036 V, 4.964 V

d. 3.21 V, 1.79 V

1582. A half-wave signal has a period of

a. 16.7 ms

b. 8.3 ms

c. 16.7 μs

d. 8.3 μs

1583. A full-wave signal has a period of

a. 16.7 μs

b. 8.3 μs

c. 8.3 ms

d. 16.7 ms

1584. When doping increases, _____ of a semiconductor decreases.

a. impurity

b. conductivity

c. bulk resistance

d. minority carrier

1585. Which of the following has the least noise level?

a. FET

b. BJT

c. triode

d. tetrode

1586. Which of the following has the highest input impedance?

a. FET

b. BJT

c. MOSFET

d. crystal diode

1587. The frequency of a half-wave signal is

a. twice the line frequency

b. equal to the line frequency

c. one-half the line frequency

d. one-fourth the line frequency

1588. For a full-wave rectifier, the output frequency

a. equals one-half the input frequency

b. equals the line frequency

c. equals two times the input frequency

d. is three times the line frequency

1589. The average dc voltage of a half wave rectifier circuit is _____ of the value of the peak input voltage.

a. 63.6 %

b. 31.8 %

c. 4.8 %

d. 6.2 %

1590. The average dc voltage of a full wave rectifier circuit is _____ of the value of the peak input voltage.

a. 31.8 %

b. 48.1 %

c. 63.6 %

d. 1 %

1591. Typical leakage current in a pn junction is in the order of

a. µA

b. mA

c. nA

d. pA

1592. The resistance of a forward biased pn junction is in the order of

a. ohm(s)

b. mohm(s)

c. µohm(s)

d. kohm(s)

1593. The removal by electronic means of one extremity of an input waveform is called _____ .

a. filtering

b. clamping

c. amplifying

d. clipping

1594. Which of the choices below does not describe a clipper circuit?

a. limiter

b. amplitude selector

c. slicer

d. baseline stabilizer

1595. The varactor diode is also called as

a. voltage-variable capacitance

b. varicap

c. epicap

d. all of the above

1596. A type of diode with no depletion layer.

a. varactor

b. varistor

c. Schottky diode

d. Shockley diode

1597. Varistors are used for line filtering to eliminate spikes and dips and is also called

a. transient regulator

b. transient limiter

c. transient filter

d. transient suppressor

1598. Defined as the random motion of holes and free electrons due to thermal agitation.

a. fission

b. fusion

c. diffusion

d. ionization

1599. The temperature coefficient of resistance of a semiconductor is

a. positive

b. negative

c. zero

d. infinity

1600. A large signal amplifier which is biased so that collector current flow continuously during the complete electrical cycle of the signal as well as when no signal is present.

a. Class A

b. Class B

c. Class AB

d. Class C

1601. A large signal amplifier which is biased so that current is non-zero for less than one-half cycle.

a. Class AB

b. Class C

c. Class A

d. Class B

1602. A class _____ amplifier stage operates with a small forward bias on the transistor so that some collector current flows all the time.

a. A

b. B

c. AB

d. C

1603. A factor shown on a data sheet that tells how much you have to reduce the power rating of a device.

a. power factor

b. derating factor

c. reactive factor

d. reduction factor

1604. The time it takes to turn off a forward-biased diode is called the

a. forward recovery time

b. reverse recovery time

c. recombination

d. turn-off time

1605. A heavily doped semiconductor has

a. high resistance

b. no effect on the semiconductor characteristics

c. more heat dissipation

d. low resistance

1606. Gallium arsenide, aluminum arsenide, and gallium phospide are classified as

a. elementary semiconductor

b. compound semiconductor

c. intrinsic material by doping

d. insulators

1607. A lightly doped semiconductor has

a. low resistance

b. high resistance

c. no effect on the semiconductor

d. more heat dissipated behaviors

1608. The property or ability of a material to support charge flow or electron flow.

a. resistance

b. conductance

c. resistivity

d. permeance

1609. Also known as photodiffusion effect.

a. Dember effect

b. skin effect

c. Destriau effect

d. night effect

1610. An effect that occurs within the entire bulk of a semiconductor material rather than in a localized region or junction.

a. silicon effect

b. dember effect

c. bulk effect

d. destriau effect

1611. Photoconductive effect means

a. the decreased conductivity of an illuminated semiconductor junction

b. the increased conductivity of an illuminated semiconductor junction

c. the conversion of photonic energy to electromagnetic energy

d. the conversion of an electromagnetic energy to photonic energy

1612. What happens to a photoconductive material when light strikes on it?

a. the conductivity of the material decreases

b. nothing important happens

c. the conductivity of the material stays the same

d. the conductivity of the material increases

1613. A type of diode for tuning receivers; operate with reverse bias and derived its name from voltage-variable capacitor.

a. zener diode

b. tunnel diode

c. varactor diode

d. crystal diode

1614. What semiconductor material is used in the construction of LED?

a. silicon

b. germanium

c. gallium

d. gallium arsenide

1615. _____ is approximately the sum of the number of protons and neutrons of an atom.

a. atomic mass

b. atomic number

c. atomic subscript

d. valence shell

1616. _____ is the number of protons in the nucleus or the number of electrons in an atom.

a. atomic mass

b. atomic weight

c. atomic number

d. free electrons

1617. The charge of a proton has the same value to that of an electron but.

a. opposite in sign

b. greater in some cases

c. lesser than in some cases

d. usually not important

1618. Mass of proton or neutron is _____ times that of an electron.

a. 1,386

b. 2,000

c. 1,836

d. 10

1619. A photodiode which conducts current only when forward biased and is exposed to light.

a. LAD

b. LED

c. PIN

d. photoconductor

1620. What is the most commonly used color for an LED?

a. orange

b. blue

c. red

d. green

1621. If the temperature of a semiconductor material increases, the number of free electrons

a. decreases

b. increases

c. remains the same

d. becomes zero

1622. Varactor diode's transition capacitance is directly proportional to the product of the permittivity of

the semiconductor material and the PN junction area but inversely proportional to its

a. resistance

b. voltage

c. depletion width

d. threshold voltage

1623. A _____ is a light-sensitive device whose number of free electrons generated is proportional to the intensity of the incident light.

a. varicap

b. photodiode

c. Schottky diode

d. LED

1624. Which of the following is NOT one of the three distinct regions in the characteristic curve of a diode?

a. forward bias region

b. reverse bias region

c. breakdown region

d. saturation region

1625. Another name for saturation current in a diode, which arises from the fact that it is directly proportional to the cross-sectional area of the diode.

a. steady-state current

b. constant current

c. thermal current

d. scale current

1626. How much voltage would you measure across the base-emitter junction of a silicon transistor at class A?

a. 0 V

b. 0.3 V

c. 3.6 V

d. 0.7 V

1627. In an amplifier, the emitter junction is

a. forward biased

b. reverse biased

c. grounded

d. shorted

1628. A manufacturer quotes in his specifications that a germanium diode conducts 50 mA at 1 V. Determine its bulk resistance

a. 100 ohms

b. 60 ohms

c. 14 ohms

d. 20 ohms

1629. A silicon diode has a maximum allowable junction temperature at 150 degrees Celsius. Find the maximum allowable power dissipation at 25 degrees Celsius ambient temperature if the diodes thermal resistance is 0.4 degrees Celsius/mW

a. 238 mW

b. 313 mW

c. 600 mW

d. 117 mW

1630. What is the principal characteristic of a zener diode?

a. a constant current under conditions of varying voltage

b. a high forward current rating

c. a constant voltage under condition of varying current

d. a very high PIV

1631. A device whose internal capacitance varies with the applied voltage.

a. zener diode

b. photodiode

c. tunnel diode

d. varactor diode

1632. The _____ transistor configuration has the highest value of input resistance.

a. common base

b. common emitter

c. emitter-stabilized

d. common collector

1633. A method of connecting amplifiers in cascade.

a. configuration

b. coupling

c. link

d. stages

1634. What is the largest region of a bipolar transistor?

a. base

b. emitter

c. collector

d. P-region

1635. A diode that has a negative resistance region and widely used in the design of oscillators, switching networks and pulse generators.

a. hot-carrier diode

b. tunnel diode

c. LED

d. Schottky diode

1636. Refers to a three-layer diode.

a. Shockley diode

b. Schottky diode

c. diac

d. triac

1637. Another name for a metal-oxide semiconductor field effect transistor is

a. JFET

b. GFET

c. IGFET

d. transistor

1638. In enhancement-type MOSFET's, the _____ region is used if the FET is to operate as an amplifier.

a. triode region

b. diode region

c. cut-off region

d. saturation region

1639. In enhancement-type MOSFET's, the _____ regions are used for operation as a switch.

a. triode and saturation

b. cut-off and saturation

c. saturation and active

d. cut-off and triode

1640. Unijunction transistor has three terminals, namely

a. gate, cathode, and anode

b. grid, plate, and cathode

c. base 1, base 2, and emitter

d. gate, base 1, and base 2

1641. What happens to the voltage drop across the diode when current flow increases rapidly in a forward-biased diode?

a. increases

b. decreases

c. becomes zero instantly

d. remains relatively constant

1642. What two elements widely used in semiconductor devices exhibit both metallic and nonmetallic characteristics?

a. gold and silicon

b. germanium and gold

c. bismuth and galena

d. silicon and germanium

1643. What are the majority current carriers in the N-type silicon?

a. free electrons

b. holes

c. bounded electrons

d. protons

1644. A/an _____ is a diode that gives off light when energized.

a. photodiode

b. LED

c. photoconductive cell

d. tunnel diode

1645. Are solid state gallium arsenide devices that emit a beam of radiant flux when forward biased.

a. LEDs

b. photoconductive cells

c. IR emitters

d. photodiodes

1646. A graphical representation in transistor wherein the emitter current is plotted against the variable emitter base voltage Veb for constant value of collector-base voltage Vcb.

a. static curve

b. input characteristic curve

c. output characteristic curve

d. semilog curve

1647. When the collector current Ic is plotted against the collector base voltage at constant emitter current Ie, the curve obtained is called.

a. output characteristic curve

b. linear curve

c. V-I curve

d. semilog curve

1648. Eg for silicon is 1.12 eV and for Germanium is 0.72 eV. It can be concluded that

a. less number of electron hole pairs will be generated in silicon than in germanium at room temperature

b. more number of electrons and hole pairs will be generated in silicon than in germanium at room temperature

c. high energy of charges is a property of silicon

d. the relationship of the two is not significant

1649. Junction diodes are commonly rated by its

a. maximum forward current and PIV

b. inductance and PIV

c. capacitance and maximum reverse current

d. circuits resistance and maximum forward current

1650. A special type of diode which is often used in RF switches, attenuators, and various types of phase shifting devices is called

a. zener diode

b. PIN diode

c. tunnel diode

d. varactor diode

1651. A volt-ampere characteristic curve that describes the relationship of the output voltage of a transistor to its output current at a step input current.

a. input characteristic

b. output characteristic

c. load line

d. saturation curve

1652. The use of _____ coupling is particularly desirable in low level, low noise audio amplifier stages to minimize hum pick up from stray magnetic fields.

a. transformer

b. direct

c. RC

d. LC

1653. The way in which the gain of an amplifier varies with the frequency is called

a. logarithmic response

b. frequency response

c. voltage response

d. phase response

1654. The maximum rectification efficiency of a half wave rectifier is

a. 81.2 %

b. 40.6 %

c. 20.6 %

d. 25 %

1655. The maximum rectification efficiency of a full-wave rectifier is

a. 40.6 %

b. 81.2 %

c. 110 %

d. 92 %

1656. A coupled amplifier which has the major advantage of permitting power to be transformed from the relatively high output impedance of the first stage to the relatively low input impedance of the second stage.

a. RC coupling

b. Transformer coupling

c. direct coupling

d. stabilized coupling

1657. Electron mobility property of silicon at 300 K is approximately equal to _____ sq m/v-s

a. 1.1

b. 0.135

c. 0.048

d. 45

1658. In a push-pull power amplifier, an input transformer can be used as a _____ providing equal amplitude input signals opposite in polarity.

a. phase reversal

b. phase-splitter

c. limiter

d. discriminator

1659. If the line frequency is 60 Hz, the output frequency of a bridge rectifier is

a. 30 Hz

b. 60 Hz

c. 120 Hz

d. 240 Hz

1660. Diode that operates in the reverse breakdown voltage and is used as a voltage regulator.

a. varactor diode

b. PIN diode

c. tunnel diode

d. zener diode

1661. Which of the following is considered a unipolar device?

a. capacitor

b. inductor

c. FET

d. BJT

1662. Invented the feedback amplifier in 1928.

a. Henry Brattain

b. Mark Twain

c. Harold Black

d. Bell Labs

1663. The arrow in a semiconductor symbols

a. always points towards the P region and away from the N region

b. always points toward the N region and away from the P region

c. is not a significant symbol

d. always points toward the PN junction

1664. If the input power of a half wave rectifier has a frequency of 400 Hz, then the ripple frequency will be equal to _____

a. 800 Hz

b. 200 Hz

c. 100 Hz

d. 400 Hz

1665. If the input frequency of a full-wave rectifier is 400 Hz, the ripple frequency will be _____.

a. twice as the input frequency

b. equal to the input frequency divided by two

c. quadruple of the input frequency

d. equal to a quarter of its input frequency

1666. Also called as the conventional amplifier.

a. common-collector circuit

b. emitter follower circuit

c. common base circuit

d. common emitter circuit

1667. Which of the following is true about emitter follower circuits?

a. the output signal is 180 degrees out of the phase with the input signal

b. the output signal is in phase with the input signal

c. the input signal is always equal to the output signal

d. an emitter follower circuit is equivalent to a common emitter connection

1668. The equation for JFET's transconductance.

a. gm = delta Ic / delta Vgs

b. gm = Ig/Vg

c. gm = Vgs/Ic

d. gm = Ic/Vds

1669. Another name for a light activated diode (LAD) is

a. IR emitter

b. LED

c. photodiode

d. LCD

1670. The semiconductor devices that radiate light or utilize light are called

a. active devices

b. photoelectric devices

c. optoelectronic devices

d. passive devices

1671. Structural category of a semiconductor diode can either be

a. electrolytic and point contact

b. junction and point contact

c. electrolytic and vacuum

d. vacuum and gaseous

1672. Zener diodes can be primarily classified as

a. forward and reverse biased

b. varactor and rectifying

c. voltage regulation and voltage reference

d. gaseous and hot carrier

1673. The principal characteristics of a tunnel diode.

a. a constant current under conditions of varying voltage

b. a negative resistance region

c. a very high PIV device

d. an internal capacitance that varies with the applied voltage

1674. A special type of semiconductor diode which varies its internal capacitance as the voltage applied to its terminal varies.

a. varactor diode

b. point contact diode

c. zener diode

d. silicon controlled rectifier

1675. The maximum forward current in a junction diode is limited by its

a. peak inverse voltage

b. maximum forward voltage

c. leakage current

d. junction temperature

1676. What are the three terminals of FET?

a. gate, source, and drain

b. plate, cathode, and grid

c. gate, source, and grid

d. input, output, and ground

1677. When a transistor is fully saturated,

a. the emitter current is at its minimum value

b. the transistor alpha is at its maximum value

c. the beta of the transistor is at minimal value

d. the collector current is at its maximum value

1678. A FET without a channel and no current occurs with zero gate voltage is

a. enhancement-mode FET

b. depletion-mode FET

c. CMOS

d. metal-oxide transistor

1679. Which of the items below is a special precaution necessary in handling FET and CMOS devices?

a. they have fragile leads that might break off

b. they are light sensitive

c. they are susceptible to damage from static charges

d. they have microwelded semiconductor junctions that are suscpetible to breakage

1680. A data sheet gives these JFET values: Idss = 20 mA and pinch of voltage is 5 volts. What is the gate-source cut-off voltage?

a. 15 volts

b. 10 volts

c. -5 volts

d. 5 volts

1681. What is the dc resistance of the JFET in the ohmic region if the drain to source current at gate shorted is equal to 20 mA and the pinch off voltage is 5 volts?

a. 300 ohm(s)

b. 250 ohm(s)

c. 1 kohm(s)

d. 100 ohm(s)

1682. Suppose a JFET has Idss = 7mA and Vgs(off) = -3 V. Calculate the drain current for a gate-source voltage of -1 V.

a. 3.1 mA

b. 0.445 A

c. 4.45 mA

d. 31.2 mA

1683. _____ are often called square law devices.

a. transistors

b. diodes

c. SCRs

d. JFETs

1684. Equivalent of transistor at saturation in JFET's is _____

a. breakdown

b. constant-current

c. pinch-off

d. ohmic

1685. When a JFET is cut-off, the depletion layers are

a. touching

b. separated

c. very far apart

d. close together

1686. The voltage that turns on an enhancement-mode device is the

a. gate-source cut-off voltage

b. pinch off voltage

c. threshold voltage

d. knee voltage

1687. Depletion-mode MOSFET acts mostly as

a. a JFET

b. a voltage source

c. a resistor

d. enhancement-mode MOSFET

1688. JFET's input impedance is

a. approaches unity

b. approaches zero

c. approaches infinity

d. is unpredictable

1689. The current gain of an emitter follower circuit is

a. high

b. low

c. moderate

d. very low

1690. The drift transistor has a high frequency cut off

a. due to the high resistance of the base area

b. since high voltage can be used

c. due to its inherent internal capacitance and low electron transit time through the base

d. due to the large area

1691. The maximum operating frequency of a transistor should be _____ percent of the frequency cut-off of the transistor to ensure best performance.

a. 100

b. 20

c. 80

d. 50

1692. When transistor applications call for a temperature operating condition which exceeds 185 degrees Fahrenheit, which element is most suitable?

a. gallium

b. antimony

c. silicon

d. impossible to operate transistor above 185 degrees Fahrenheit

1693. _____ is the most important factor of a power transistor

a. output resistance

b. heat dissipation

c. input voltage

d. output parameter

1694. When the electron transit time through the base region is very short, this

a. creates a higher potential barrier

b. makes the transistor unable to amplify its signal

c. provides a higher cut-off frequency

d. provides a zener effect

1695. When the transistors are used in video amplifiers, its main limitation is

a. low peak voltage

b. poor frequency response

c. low peak current

d. poor filtering of signals

1696. Impedance matching in circuit is important for _____ transfer of energy.

a. minimum

b. enough

c. maximum

d. limited

1697. An amplifier has an output power of 3 watts. Determine the power output level with reference to 1 mW.

a. 34.77 dBm

b. 40 dBm

c. -30 dBm

d. -40.1 dBm

1698. A unijunction transistor is a three-terminal device consisting of _____ semiconductor layers.

a. 1

b. 2

c. 3

d. 4

1699. It is the process by which atoms are constantly losing and regaining free electrons.

a. ionization

b. covalent bond

c. recombination

d. parasitism

1700. Termed as unwanted oscillation that may occur in almost any type of circuits, oscillator, amplifier, power supply, receiver and transmitters.

a. white noise

b. parasitic oscillators

c. ripples

d. pulsating dc signal

1701. Which of the items below describes an RF amplifier which amplify a weak signal voltage in relatively the same proportion as it will amplify a stronger signal voltage?

a. Class A amplifier

b. Linear amplifier

c. Non-linear amplifier

d. Inverting amplifier

1702. It is the maximum amount of reverse voltage which can be applied on a diode before the breakdown point is reached.

a. Zener voltage

b. peak inverse voltage

c. breakdown voltage

d. threshold voltage

1703. It refers to any of the over 100 different substances which have never been separated into simpler substances by chemical means and which alone or in combination constitute all matter.

a. element

b. atom

c. holes

d. electrons

1704. It is also known as a solid state lamp which utilizes the fall of an electron from the conduction level to the valence level to develop an energy release in the form of heat or light.

a. LCD

b. LED

c. photodiode

d. photoconductive cell

1705. Which of the following is not true with alpha of a transistor.

a. it is the current gain of a common-base configuration

b. it is the ratio of the change in collector current to the change in emitter current

c. it is usually having a value of unity in some approximations

d. it is the ratio of the change in collector current to the change in base current

1706. Present atomic theories place the mass and positive charge of an atom in a central nucleus composed of protons and

a. holes

b. core

c. neutrons

d. magnetron

1707. The _____ as a fundamental particle is considered as a bundle of radiant energy or light, the amount of energy being related to the frequency.

a. protons

b. LED

c. photons

d. comet

1708. Electron emitted by the mechanical impact of an ion striking a surface is called

a. primary electrons

b. secondary electrons

c. moderately doped electrons

d. polarized charge

1709. The break up of nuclei into nuclear fragments that are themselves nuclei is called

a. fission

b. isotope

c. neutrino

d. atom

1710. Particles of zero charge and zero mass.

a. fusion

b. neutrinos

c. fission

d. isotopes

1711. Approximate mass of an electron at rest.

a. 9.1096 x 10^-31 kg

b. 1.6726 x 10^-27 kg

c. 1.6726 x 10^-31 kg

d. 1.7588 x 10^11 kg

1712. A term used to describe the outermost shell of an atom.

a. valence shell

b. free shell

c. electron shell

d. conductive shell

1713. Are the electrons at the outermost shell which are usually weakly attracted by the core such that an outside force can easily dislodge these electrons from the atom.

a. free electrons

b. orbiting electrons

c. bound electrons

d. loose electrons

1714. The reason why electrons are not pulled in the positively charged nucleus is because of the _____ which usually became exactly equals the inward attraction of the nucleus.

a. kinetic energy

b. energy at rest

c. centrifugal force

d. frictional force

1715. Which of the following items is not a type of material?

a. conductor

b. semiconductor

c. insulator

d. diode

1716. The highest energy band of an atom which can be filled with electrons.

a. valence band

b. conduction band

c. insulation band

d. energy level

1717. An energy band in which electrons can move freely.

a. valence band

b. conduction band

c. energy gap

d. insulation band

1718. Approximate energy gap in insulator is

a. Eg => 5 eV

b. Eg = 1.1 eV

c. Eg = 0.67 eV

d. Eg = 4 eV

1719. The energy gap for semiconductors made of silicon is

a. Eg = 5 eV

b. Eg = 1.1 eV

c. Eg = 0.67 eV

d. Eg = 4 eV

1720. The energy gap for germanium made semiconductors is

a. Eg = 5 eV

b. Eg = 1.1 eV

c. Eg = 0.67 eV

d. no energy gap

1721. A type of material which usually has one valence electron.

a. insulator

b. semiconductor

c. conductor

d. transistor

1722. A type of material which usually has four valence electrons.

a. insulator

b. semiconductor

c. conductor

d. IGFET

1723. Which of the following is considered as the best conductor?

a. gold

b. silicon

c. germanium

d. mica

1724. Which of the following below is not taking place inside a silicon crystal?

a. some free electrons and holes are being created by thermal energy

b. other free electrons and holes are recombining

c. some free electrons and holes exist in an in-between state

d. some free electrons disappears in the lattice due to vaporization

1725. It is an arrangement of silicon atoms combined to form a solid such that there are now 8 electrons in the valence shell.

a. crystal

b. bonding

c. recombination

d. solid silicon

1726. The sharing of valence electrons to produce a chemically stable atom.

a. bound electrons

b. crystal

c. covalent bond

d. recombination

1727. The eight electrons which are tightly held by the atom are called

a. valence electrons

b. outermost shell

c. bound electrons

d. covalent electrons

1728. When an atom has bound electrons, it is described as

a. all charges do recombination

b. valence electrons disappear due to vapor

c. filled or saturated since valence orbit can hold not more than 8 electrons

d. merging of electrons and other particles

1729. Refers to the temperature of the surrounding air.

a. atmospheric temperature

b. ambient temperature

c. freezing point

d. cooling temperature

1730. The term used to describe the released electrons dislodged from its original shell due to increase in temperature which joins into a larger orbit.

a. free electrons

b. bound electrons

c. covalent electrons

d. merge electrons

1731. The term used to refer to the vacancy left by the free electron when it departs from its original shell.

a. proton

b. hole

c. neutron

d. nucleus

1732. The merging of a free electron and a hole inside the silicon crystal.

a. covalent bond

b. recombination

c. merged electron

d. valence bond

1733. The amount of time between the creation and disappearance of a free electron.

a. recombination time

b. bounding time

c. lifetime

d. propagation time

1734. The purpose of adding an impurity atom to an intrinsic crystal is

a. to alter its insulating property

b. to increase its electric conductivity

c. to stop conduction

d. to increase the resistivity of the semiconductor material

1735. An extrinsic semiconductor produces _____ when a pentavalent atom are added to the molten silicon

a. intrinsic

b. p-type

c. n-type

d. hybrid type

1736. Which of the items below is not a pentavalent atom?

a. phosphorous

b. aluminum

c. antimony

d. arsenic

1737. The reduction of power handling capability of the diode due to the increase of ambient temperature from room temperature.

a. maximum junction temperature

b. linear power derating factor

c. power factor

d. amplification factor

1738. The maximum temperature the diode can operate before burning.

a. maximum dissipation factor

b. maximum junction temperature

c. ambient temperature

d. boiling temperature rating

1739. Reverse recovery time of the diode is computed as the _____ of the storage time and transition interval from the forward to reverse bias.

a. sum

b. product

c. quotient

d. difference

1740. An intrinsic semiconductor has some holes in it at room temperature. What causes these holes?

a. doping

b. thermal energy

c. free electrons

d. valence electrons

1741. When a diode is forward biased, the recombination of free electrons and holes may produce _____ .

a. heat

b. light

c. radiation

d. all of the above

1742. Which of the following doping elements have a valence of 5?

a. gallium

b. boron

c. aluminum

d. phosphorous

1743. Which of the following doping elements have a valance of 4?

a. arsenic

b. gallium

c. aluminum

d. silicon

1744. Which of the following doping elements have a valance of 3?

a. gallium

b. boron

c. aluminum

d. phosphorous

1745. A positive charge outside the nucleus which is present only in semiconductor due to unfilled covalent bonds.

a. electron

b. proton

c. hole

d. neutron

1746. When charges are forced to move by the electric

field of a potential difference, _____ current is said to flow.

a. reverse

b. drift

c. leakage

d. threshold

1747. When a PN junction is connected to a battery in such a way that P-side is connected to positive terminal of the battery and the negative terminal to N-side, this connection is known as

a. forward bias

b. reverse bias

c. back bias

d. knee bias

1748. When a PN junction is connected to a battery in such a way that P-side is connected to negative terminal of the battery and positive terminal to N-side, this connection is known as

a. forward bias

b. reverse bias

c. depletion connection

d. positive bias

1749. An electron in the conduction band

a. losses its charge easily

b. jumps to the tip of the crystal

c. has higher energy than the electron in the valence band

d. has lower energy than the electron in the valence band

1750. An ideal diode

a. should have a zero resistance in the forward bias as well in the reverse bias

b. should have an infinitely large resistance in the forward bias and zero resistance in reverse bias

c. should have zero resistance in the forward bias and an infinitely large resistance in reverse bias

d. should have infinitely large resistance in forward as well as reverse bias

1751. Thermal voltage (VT) is approximately equal to _____ at room temperature (20 degrees Celsius).

a. 25 mV

b. 25 V

c. 100 mV

d. 100 V

1752. Boltzmann's constant is equivalent to

a. 1.62 x 10^-18 Celsius

b. 8.62 x 10^-5 eV/Kelvin

c. 0.7 V

d. 1.3 x 10^8 V/m

1753. The preferred form of biasing a JFET amplifier is through the

a. voltage divider bias

b. gate bias

c. self bias

d. source bias

1754. The gate-to-source on voltage of an n-channel enhancement mode MOSFET is

a. less than Vth

b. equal to Vgs(off)

c. greater than Vds(on)

d. greater than Vgs(th)

1755. A mechanism for carrier motion in semiconductor which occurs when an electric field is applied across a piece of silicon.

a. carrier diffusion

b. carrier drift

c. recombination

d. diffusivity

1756. _____ occurs in pn diodes when the minority carriers that cross the depletion region under the influence of the electric field, gain sufficient kinetic energy to be able to break covalent bonds in atoms with which they collide.

a. drift

b. avalanche breakdown

c. diffusion

d. saturation

1757. An extrinsic semiconductor which is produced when a trivalent atom are added to the molten silicon.

a. aluminum

b. N-type

c. P-type

d. holes

1758. It is a stable positive charge in the nucleus that is not free to move.

a. hole

b. proton

c. neutron

d. electron

1759. The creation of a voltage in a conductor or semiconductor by illumination of one surface.

a. dember effect

b. skin effect

c. destriau effect

d. night effect

1760. _____ uses a material catwhisker as its anode and is classified as a hot-carrier diode.

a. PIN

b. point-contact diode

c. shockley diode

d. crystal diode

1761. What is the typical operating current of an LED?

a. 50 mA

b. 10 mA

c. 20 mA

d. 5 mA

1762. At absolute zero temperature, a semiconductor behaves as a/an

a. good conductor

b. superconductor

c. insulator

d. variable resistor

1763. Avalanche breakdown in a semiconductor takes place

a. when forward current exceeds a certain value

b. when potential barrier is reduced to zero

c. when reverse bias exceeds a certain value

d. when forward bias exceeds a certain value

1764. A cold-cathode glow-discharge diode having a copper anode and a large cathode of sodium or other material.

a. tunnel diode

b. BARITT diode

c. anotron

d. READ diode

1765. A microwave diode in which the carriers that transverse the drift region are generated by minority carrier injection from a forward-biased junction instead of being extracted from the plasma of an avalanche region.

a. IMPATT

b. TRAPATT

c. BARITT diode

d. Esaki diode

1766. A _____ is an electronic circuit that converts AC to DC but where the DC output peak value can be greater than the AC input peak value.

a. voltage multiplier

b. rectifier

c. clamper

d. clipper

1767. Which of the item below does not mean a VARACTOR diode?

a. VOLTACAPS

b. VARICAPS

c. voltage variable capacitor

d. variable resistance diode

1768. What is the charge of a hole?

a. equal to that of a proton

b. equal to that of an electron

c. equal to that of a neutron

d. equal to zero

1769. It is the current gain for the common-emitter configuration.

a. alpha

b. beta

c. delta

d. gamma

1770. When a factor of a junction transistor is 0.98, the factor would be equivalent to _____ value of transistor's beta.

a. 49

b. 60

c. 20

d. 38

1771. An emitter resistor is used for _____ in most amplifier circuits.

a. temperature stabilization

b. biasing a bipolar junction transistor

c. current limitation

d. voltage amplification

1772. _____ is a line drawn between the open-circuit voltage and the short-circuit current on a JFET characteristic curve.

a. operating point

b. load line

c. tangent line

d. quiescent point

1773. Which of the choices below is another name for a photoconductive cell?

a. varicap

b. varistor

c. photoresistive device

d. photodiode

1774. When both the emitter and collector junctions are reversed biased, the transistor is said to be at _____ region.

a. active

b. cut-off

c. saturation

d. amplifying

1775. A type of diode used for tuning receivers and is normally operated with reverse bias and derived its name from voltage variable capacitor.

a. hot-carrier diode

b. varactor diode

c. tunnel diode

d. zener diode

1776. A silicon npn tetrode that serves as a bistable negative-resistance device.

a. BJT

b. binistor

c. FET

d. thermistor

1777. A multiple-terminal solid-state device similar to a transistor that generates frequencies up to about 10,000 MHz by injecting electrons or holes into a space-charge layer which rapidly forces these carriers to a collecting electrode.

a. magnetron

b. IMPATT

c. klystron

d. spacistor

1778. Which of the items below is not a good conductor?

a. electrolytes

b. ionized gases

c. silicon

d. silver

1779. What is the net charge if a certain semiconductor losses all 4 valence electrons?

a. +4

b. -4

c. +8

d. -8

1780. What is the net charge if a certain semiconductor gains one valence electron?

a. +1

b. -1

c. +4

d. -4

1781. What is the approximate voltage drop of LED?

a. 0.3 V

b. 0.7 V

c. 1.5 V

d. 3.8 V

1782. Under standard conditions, pure germanium has a resistivity of

a. 60 ohm(s)-cm

b. 60 ohm(s)-m

c. 60 ohm(s)-mm

d. 60 x 10^-4 ohm(s)-cm

1783. The holding of one extreme amplitude of the input waveform to a certain amount of potential is called

a. slicing

b. limiting

c. rectifying

d. clamping

1784. Clamper is also known as

a. DC restorer

b. rectifier

c. charger

d. clipper

1785. Percentage ripple can be calculated by getting the _____ and multiplying the result by 100%

a. ratio of the input resistance and input voltage

b. product of the ac current to the dc current

c. ratio of the ac voltage to dc voltage

d. addition of the ac and dc component of the given signal

1786. Which of the following materials has the smallest leakage current?

a. germanium

b. carbon

c. sulphur

d. silicon

1787. _____ refers to the annihilation of a hole and electron.

a. doping

b. recombination

c. diffusion

d. bonding

1788. What are the two possible breakdown mechanism in pn junction diodes?

a. reverse and breakdown effects

b. diffusion

c. zener breakdown

d. zener and avalanche effects

1789. _____ occurs in pn diodes when the electric field in the depletion layer increases to the point where it can break covalent bonds and generate electron hole pairs.

a. covalent breakdown

b. diffusion

c. zener breakdown

d. avalanche effect

1790. The amount of additional energy required to emit an electron from the surface of a metal is called

a. potential barrier

b. junction voltage

c. work function

d. knee voltage

1791. When the temperature of a pure semiconductor is increased, its resistances

a. decreases

b. remains the same

c. increases

d. cannot be estimated

1792. As a general rule, _____ are found only in semiconductors.

a. electrons

b. bulk resistances

c. depletion layers

d. holes

1793. _____ in a semiconductor is defined as the incomplete part of an electron pair bond.

a. hole

b. valence electron

c. impurity

d. ion

1794. When the number of free electrons is increased in a doped semiconductor, it becomes a/an _____ semiconductor.

a. n type

b. p type

c. pn type

d. np type

1795. Reducing the number of free electrons in a doped semiconductor forms a/an _____ semiconductor.

a. n type

b. p type

c. pnpn type

d. npn type

1796. An acceptor atom contains how many valence electrons?

a. 1

b. 2

c. 3

d. 4

1797. The resistivity of an extrinsic semiconductor is

a. 1 ohm(s)-cm

b. 2 ohm(s)-cm

c. 3 ohm(s)-cm

d. 4 ohm(s)-cm

1798. The forward resistance of a crystal diode is in the order of

a. ohm(s)

b. mohm(s)

c. µohm(s)

d. kohm(s)

1799. What is the ideal value of stability factor?

a. 1

b. 0.5

c. infinite

d. 100

1800. Approximate mass of a neutron at rest.

a. 1.6726 x 10^-27 kg

b. 9.1096 x 10^-31 kg

c. 1.6022 x 10^-19 kg

d. no mass

1801. Approximate mass at rest of a proton is _____ to that of a neutron.

a. greater than

b. equal

c. less than

d. comparable

1802. Charge of an electron is approximately equal to

a. 1.6022 x 10^-19 C

b. -1.6726 x 10^-27 C

c. -1.6022 x 10^-19 C

d. no charge

1803. What capacitors are used in transistor amplifiers?

a. mica

b. air

c. electrolytic

d. paper

1804. What is the reason why a common collector is used for impedance matching?

a. its output impedance is very high

b. its output impedance is very low

c. its input impedance is very low

d. its input impedance is very high

1805. In power supplies, circuits that are employed in separating the ac and dc components and bypass the ac components around the load, or prevent their generation are called

a. filters

b. limiters

c. series capacitors

d. diode circuits

1806. A nuclei with common number of protons, but with different number of neutrons.

a. fission

b. isotopes

c. atom

d. core

1807. What is the reason why FET has a high input impedance?

a. because its input is forward biased

b. because of the impurity atoms

c. because its input is reverse biased

d. because it is made of semiconductor material

1808. A MOSFET is sometimes called _____ FET.

a. open gate

b. shorted gate

c. metallic gate

d. insulated gate

1809. Which of the choices is an advantage of a MOSFET over a BJT in an RF amplifier circuit?

a. low voltage operation

b. low noise

c. low amplification of signals

d. compatibility

1810. The voltage gain of an emitter follower circuit is

a. high

b. low

c. very high

d. moderate

1811. A _____ is considered a current controlled device.

a. diode

b. FET

c. transistor

d. resistor

1812. A _____ is considered a voltage controlled device.

a. FET

b. diode

c. transistor

d. capacitor

1813. The value of a coupling capacitor, Cc in RC coupling is about

a. 0.01 µF

b. 0.1 µF

c. 10 µF

d. 100 µF

1814. FET has a pinch off voltage of about

a. 0.5 V

b. 5 V

c. 10 V

d. 20 V

1815. What is the point of intersection between a diode characteristic and a load line?

a. Q point

b. quiescent point

c. operating point

d. all of the above

1816. A measure of the ability of an LED to produce the desired number of lumens generated per applied watt of electrical energy.

a. luminous intensity

b. luminous efficiency

c. luminous efficacy

d. luminous ability

1817. What kind of instrument is an ammeter?

a. An indicating

b. A recording

c. An integrating

d. A dc meter

1818. As the deflection of the moving system increases, the

controlling torque in an indicating instrument.

a. remains the same

b. increases

c. decreases

d. becomes zero

1819. Which is the best type of ammeter movement?

a. iron-wave

b. dynamometer

c. D'Arsonval

d. Moving Iron

1820. Which dynamometer type has uniform scale?

a. wattmeter

b. voltmeter

c. ammeter

d. ohmmeter

1821. When both deflecting and controlling torque act, the pointer of an indicating instrument comes to

a. rest

b. mid-position

c. maximum position

d. 3/4 position

1822. The output voltage of a thermocouple

a. remains constant with temperature

b. decreases with applied voltage

c. increases with temperature

d. increases with applied voltage

1823. An instrument in which the magnitude of the measured quantity is indicated by means of a pointer.

a. analog instrument

b. digital instrument

c. ammeter

d. voltmeter

1824. If the pointer of an indicating instrument is in motion, then what opposes deflecting torque?

a. controlling torque

b. damping torque

c. damping and controlling torques

d. frictional torque

1825. How can electric currents be induced with a coil and a magnet?

a. by placing the coil parallel to the magnetic field

b. by placing the coil at right angles with the magnetic field

c. by moving either the magnet or the coil

d. by keeping the coil and the magnet perfectly stationary

1826. When should a fuse be replaced with a higher rated unit?

a. never

b. when the original value is not available

c. if it blows

d. when fuses of the original value are small in size

1827. The pointer of an indicating instrument is generally made of

a. copper

b. silver

c. aluminum

d. gold

1828. The time interval that a waveform is high (or low) is the _____ of the signal.

a. pulse width

b. pulse length

c. pulse position

d. duty cycle

1829. A Wheatstone bridge is balanced if

a. the ratio of resistors on one side of the bridge is one while the ratio of resistors on the other side is infinity

b. the ratio of resistors on one side of the bridge is greater than the ratio of resistors on the other side

c. the ratio of resistors on one side of the bridge equals the ratio of resistors on the other side

d. the bridge uses identical resistors

1830. The pointer of an indicating instrument is in the final deflected position, the _____ is zero.

a. deflecting torque

b. controlling torque

c. damping torque

d. frictional

1831. A moving system force in an analog instruments which causes the moving system to deflect from its zero position.

a. deflecting force

b. damping force

c. return-to-zero force

d. controlling force

1832. A moving system force in analog instruments which ensures that the deflection of the pointer for a given value of measured quantity always has the same value.

a. damping force

b. controlling force

c. NRZ force

d. deflecting force

1833. All voltmeters except one of the following are operated by the passage of current.

a. moving-iron

b. dynamometer

c. electrostatic

d. permanent-magnet moving coil

1834. Disc is made of what material in eddy current damping?

a. conductor and non-magnetic material

b. conductor and magnetic material

c. non-conductor and non-magnetic material

d. non-conductor and magnetic material

1835. The time interval between pulses is called

a. pulse frequency

b. pulse delay

c. pulse duration

d. pulse period

1836. An oscilloscope provides easy measurement of _____ values.

a. instantaneous

b. rms

c. peak to peak

d. average

1837. An element in electronics which serves as a protection against overload?

a. resistor

b. transistor

c. semiconductor

d. fuse

1838. What sensor provides a dc voltage approximately 1V at 10 mW?

a. diode sensor

b. thermocouple sensor

c. thermal sensor

d. thermistor sensor

1839. Hot-wire instrument has a/an _____ scale.

a. uniform

b. squared

c. logarithmic

d. exponential

1840. For time measurements, _____ scale of the scope is used.

a. horizontal

b. diagonal

c. vertical

d. both vertical and horizontal

1841. Fluid friction damping is employed in one of the following.

a. dynamometer wattmeter

b. induction type energy meter

c. hot-wire ammeter

d. Kelvin electrostatic voltmeter

1842. Current range extension in moving coil instruments can be achieved by placing a _____ in shunt with the instrument.

a. low resistance resistor

b. high resistance resistor

c. high voltage transistor

d. capacitor

1843. Permanent-magnet moving coil instrument can be used in

a. ac work only

b. both dc and ac work

c. dc work only

d. neither dc nor ac works

1844. What CRT element provides for control of the number of electrons passing farther into the tube?

a. cathode

b. control grid

c. anode

d. phosphor screen

1845. _____ refers to garaging the two adjustments of an AC bridge together in such a way that changing in one adjustment changes the other in a special way, but changing the second adjustment does not change the first.

a. logarithmic nulling

b. orthogonal nulling

c. exponential nulling

d. linear nulling

1846. When the vertical input is 0V, the electron beam may be positioned at the _____ of the screen.

a. top center

b. vertical center

c. horizontal center

d. bottom center

1847. What is the reason why the scale of a permanent-magnet moving coil instrument is uniform?

a. because of effective eddy current damping

b. because external magnetic field have no effect

c. because it is spring controlled

d. because it has no hysteresis loss

1848. A sensing element that provides a dc voltage less than 10mV with typical power range of 0.1 to 100 mW.

a. thermal converters

b. thermal sensors

c. thermocouple sensors

d. diode sensors

1849. Tank circuit frequency can be measured by _____.

a. voltmeter

b. signal generator

c. grid-dip meter

d. absorption meter

1850. Shunts are generally made of what material?

a. constantan

b. silver

c. aluminum

d. manganin

1851. _____ meter is the most sensitive.

a. 10 mA

b. 1 mA

c. 1 A

d. 1 µA

1852. A dynamometer instrument is mainly used as a/an

a. dc ammeter

b. wattmeter

c. dc voltmeter

d. ohmmeter

1853. Which movement is the most expensive?

a. D'Arsonval movement

b. dynamometer

c. moving-iron

d. iron-wave

1854. Attraction and repulsion instruments are considered as

a. moving-cell instruments

b. moving-iron instruments

c. electrodynamic instruments

d. dynamometer

1855. In wheatstone bridge, bridge balance is a condition where

a. there is no current that flows through the load

b. there is current that flows through the load

c. there is potential difference between load terminals

d. the galvanometer reading is maximum

1856. The temperature coefficient of resistance of the shunt material is

a. negligible

b. negative

c. positive

d. infinite

1857. In VTVMS, _____ is used to balance both halves of the difference amplifier or cathode-coupled amplifier.

a. trigger adjust

b. scale

c. infinite adjust

d. zero adjust

1858. In an oscilloscope, _____ adjusts the brightness of the spot by changing the current on the control grid.

a. intensity control

b. focus control

c. astigmatism control

d. position control

1859. A force in analog instrument which quickly brings the moving system to rest in its final position.

a. damping force

b. controlling force

c. deflecting force

d. force at rest

1860. A small swamping resistance is connected in series with operating coil of a moving coil ammeter in order to compensate for the effects of

a. temperature variation

b. hysteresis

c. external magnetic fields

d. temperature inversion

1861. The resistance of a moving-coil instrument is 10ohm(s) and gives full-scale deflection at 10mA. Calculate the resistance of the shunt required to convert the instrument to give full-scale deflection when the circuit current is 5 A.

a. 0.02004ohm(s)

b. 0.20004ohm(s)

c. 1ohm(s)

d. 2.04ohm(s)

1862. The typical power range of a diode sensor is

a. 0.1μW to 10mW

b. 0.1pW to 10mW

c. 0.1mW to 100W

d. 0.1nW to 10mW

1863. A _____ operates on the magnetic attraction-repulsion principles.

a. spectrum analyzer

b. oscilloscope

c. field strength meter

d. milliameter

1864. A dc bridge widely used for the accurate measurements of resistance.

a. Owen bridge

b. Hay bridge

c. Potentiometer bridge

d. Wheatstone bridge

1865. Which of the following is a dc bridge that is very useful for making extremely accurate voltage measurements?

a. Wheatstone bridge

b. Potentiometer bridge

c. Kelvin bridge

d. Owen bridge

1866. Majority of analog measuring instrument utilizes one of the following effects.

a. heating effect

b. electrostatic effect

c. magnetic effect

d. chemical effect

1867. Multimeter typically provides measurement of _____ values (for a sinusoidal waveform).

a. peak

b. rms

c. average

d. instantaneous

1868. Dynamometer type instrument can be used for

a. ac work only

b. dc work only

c. both dc and ac works

d. neither dc nor ac works

1869. _____ is an instrument in which springs provide the controlling torque as well as serve to lead current into and out of the operating coil.

a. moving-iron

b. permanent-magnet moving coil

c. hot-wire

d. iron-wire

1870. In VTVMS, _____ refers to the smallest signal that can be reliably measured.

a. threshold signal

b. minimum signal

c. sensitivity

d. input signal

1871. The frequency of rotation in some rotating machinery can be measured by a

a. VTVM

b. tachometer

c. spectral meter

d. stroboscope

1872. Which of the items below describes an absorption meter's usage

a. check the output frequency of a transmitter

b. monitors the output current of a receiver

c. monitors the frequency ratio of a device

d. frequency generator

1873. An instrument used for observing voltage and current waveforms is the _____.

a. multimeter

b. DMM

c. oscilloscope

d. telescope

1874. Which of the following forces does not act on the moving systems of analog instruments.

a. a deflecting force

b. a controlling force

c. a damping force

d. an electrostatic force

1875. When current through the operating coil of a moving-iron instrument is tripled the operating force becomes

a. six times

b. 1/2 time

c. 9 times

d. 3 times

1876. What is the typical full-scale deflection current of a moving coil instrument?

a. 50 mA

b. 50 nA

c. 50 µA

d. 50 A

1877. An instrument used for measuring the amount of current flowing in a circuit.

a. voltmeter

b. ammeter

c. oscilloscope

d. meter amperage

1878. A type of meter that gives a precise reading of voltage, current or resistance where there is the generation of samples at the input and then feeds it to a digital read-out.

a. VOM

b. VTVM

c. DMM

d. DTMF

1879. What is the typical full-scale voltage across a moving coil voltmeter?

a. 50 nV

b. 50 µV

c. 50 V

d. 50 mV

1880. The period of a repetitive signal is

a. 1/4 cycle of the waveform

b. 2 cycles of the waveform

c. 1 cycle of the waveform

d. 1/2 cycle of the waveform

1881. An element of a CRT, that releases electrons when heated indirectly by a filament.

a. cathode

b. grid

c. anode

d. phosphor screen

1882. Moving-iron instrument has a/an _____ scale.

a. uniform

b. logarithmic

c. squared

d. exponential

1883. A pattern displayed by oscilloscopes which has a steady characteristic is called

a. Lissajous

b. Nyquist pattern

c. Barkhausen's criterion

d. Fermat's pattern

1884. A galvanometer with 20 ohms coil resistance has a full-scale deflection of 10 mA. A 0.02 ohm is placed across the meter to increase its rating capacity. What is the new full scale current for the meter?

a. 1.01 A

b. 100.1 A

c. 10.10 A

d. 10.01 A

1885. Which of the following extends the range of a moving-iron ac ammeter?

a. a shunt

b. a multiplier

c. changing number of turns of operating coil

d. a series

1886. Which of the following is not a basic part of a CRT?

a. electron gun

b. focusing and accelerating elements

c. horizontal and vertical deflecting plates

d. sawtooth generator

1887. For amplitude measurements, _____ scale is calibrated in either volts per centimeter (V/cm), or millivolts per centimeter (mV/cm).

a. horizontal

b. diagonal

c. vertical

d. voltage

1888. _____ ammeter is used to measure high-frequency currents.

a. hot-wire

b. moving-iron

c. dynamometer

d. thermocouple

1889. Which of the voltmeter is used for measuring high direct voltage (say 10kV)?

a. permanent-magnet moving coil

b. hot-wire

c. electrostatic

d. moving iron

1890. A common technique for measuring power at high frequency is to

a. employ high power meter

b. use microwave meters

c. employ a sensing element that converts the RF power to a measurable dc or low-frequency signal

d. use thermocouples

1891. The _____ provides the visual display showing the form of the signal applied as a waveform on the front screen of a cathode ray oscilloscope.

a. television

b. computer

c. meter face

d. CRT

1892. Electrostatic instruments are exclusively used as

a. voltmeters

b. ohmmeters

c. ammeters

d. wattmeters

1893. What is the typical power range for thermocouple sensors?

a. 0.1 mW to 100W

b. 0.1 µW to 100mW

c. 0.1 nW to 100µW

d. 0.1 pW to 100nW

1893. An electric pyrometer is an instrument used to measure

a. phase

b. high temperatures

c. frequency

d. power

1894. Which instrument is the most sensitive?

a. moving-iron

b. dynamometer

c. hot-wire

d. permanent-magnet moving coil

1895. Which is the most commonly used induction type instrument?

a. induction voltmeter

b. induction watt-hour meter

c. induction wattmeter

d. induction ammeter

1896. What type of instrument is the watt-hour meter?

a. an integrating

b. a recording

c. an indicating

d. a power meter

1897. A certain pulse measures 10ms and has a period of 50 ms. The duty cycle is

a. 20%

b. 10%

c. 5%

d. 100%

1898. Indicating instrument is assumed to be most accurate at what part of the scale?

a. At beginning

b. at half or full

c. at ending

d. any part

1899. On a simple ohmmeter, the 0 ohm(s) mark is located _____ of the scale.

a. at far left

b. in the middle

c. at far right

d. anywhere

1900. One of the basic functions of electronic circuit is

a. the generation and manipulation of electronic waveshapes

b. the creation of a signal

c. the transmission of electric signal

d. the reception of electric signal

1901. What provides a visual representation of any waveform applied to the input terminals?

a. cathode ray oscilloscope (CRO)

b. cathode ray tube (CRT)

c. spectrum analyzer

d. VTVMs

1902. The interval of a pulse from start to end is the _____ of the pulse.

a. period

b. width

c. position

d. duty cycle

1903. Considered as the "heart" of the cathode ray oscilloscope.

a. cathode ray tube (CRT)

b. sawtooth generator

c. horizontal amplifier

d. vertical amplifier

1904. A material that glows when struck by the energetic electrons in a CRT.

a. aquadag

b. silicon

c. germanium

d. phosphor

1905. What sensor provides a change of resistance with typical power range of 1µW to 10mW and with maximum frequency greater than 100GHz?

a. thermal converter

b. diode sensor

c. thermocouple sensor

d. thermistor sensor

1906. An ammeter with an internal resistance of 50 ohm(s) is used to measure a current through a load resistor Rl = 1 kohm(s). Determine the percentage error of the reading due to ammeter insertion.

a. 67.4 %

b. 6.74%

c. 4.76%

d. 47.6%

1907. Most AC voltmeters have an rms scale which is valid only if the input signal being measured is a _____ signal.

a. square wave

b. triangular

c. sawtooth

d. sinusoidal

1908. Which of the following bridges measures dc resistance?

a. wheatstone bridge

b. maxwell bridge

c. hay bridge

d. schering bridge

1909. What bridge is used to measure high-Q inductors (Q > 10)?

a. wheatstone bridge

b. wien bridge

c. hay bridge

d. maxwell bridge

1910. Maxwell bridge measures an unknown inductance in terms of known

a. resistance

b. frequency

c. inductance

d. capacitance

1911. _____ is used for measuring medium Q coils (1 < Q <10).

a. maxwell bridge

b. wheatstone bridge

c. kelvin bridge

d. hay bridge

1912. _____ has a series RC combination in one arm and a parallel RC combination in the adjoining arm and used as a notch filter in harmonic distortion analyzer.

a. wien bridge

b. maxwell bridge

c. kelvin bridge

d. hay bridge

1913. Sensitivity of a voltmeter is expressed in

a. ohm(s)/V

b. ohm(s)/A

c. V/ohm(s)

d. A/ohm(s)

1914. The smallest change in applied stimulus that will indicate a detectable change in deflection in an indicating instrument is called

a. sensitivity

b. accuracy

c. resolution

d. precision

1915. Insulation resistance is measured by which meter?

a. ohmmeter

b. insulation meter

c. wien bridge

d. megger

1916. What are the two principal electrodes in every tube?

a. Plate and control grid

b. Cathode and screen grid

c. Plate and cathode

d. Screen grid and control grid

1917. For given plate voltage, if negative potential on the control grid of a triode is increases, the plate current

a. decreases

b. remains the same

c. increases

d. becomes zero

1918. A vacuum diode can be used as

a. an amplifier

b. an oscillator

c. a rectifier

d. a regulator

1919. Which generates the least noise in operation?

a. triode valve

b. tetrode valve

c. pentode valve

d. octode valve

1920. A vacuum tube will conduct only if its plate is _____ with respect to cathode.

a. +

b. -

c. at zero potential

d. an infinite potential

1921. Saturation in a tube is a condition where an increase in plate voltage will produce

a. a rise in electron emission

b. a decrease in electron emission

c. no appreciable change in plate current

d. an appreciable change in plate current

1922. A vacuum diode can be used as

a. an amplifier

b. an oscillator

c. a rectifier

d. an attenuator

1923. Which tube generates the greatest noise?

a. triode

b. tetrode

c. pentode

d. diode

1924. Before ionization, a gas-filled tube has a _____ resistance.

a. very high

b. very small

c. small

d. zero

1925. The negative resistance characteristics of the tetrode is due to

a. secondary emission

b. plate being + with respect to cathode

c. control grid being - with respect to cathode

d. screen grid being - with respect to cathode

1926. What emitter is used in X-ray tubes?

a. thoriated tungsten

b. oxide-coated

c. tungsten

d. nickel

1927. When the temperature of an emitter is increased two times, the electron emission

a. increases two times

b. increases four times

c. increases several million times

d. decreases two times

1928. What is the typical life span of an oxide coated emitter?

a. 500 hours

b. 200 hours

c. 1,000 hours

d. 10,000 hours

1929. The cathode heating time of a thermionic gas diode is _____ that of a vacuum diode.

a. the same as

b. much less than

c. much more than

d. related to

1930. What is the solid state equivalent of thyratron?

a. FET

b. SCR

c. BJT

d. UJT

1931. The grid to plate capacitance is least in _____ valve

a. triode

b. tetrode

c. pentode

d. diode

1932. The peak inverse voltage of a diode is defined as the maximum allowable

a. negative voltage across the load resistor

b. negative voltage applied to plate with respect to cathode

c. positive voltage to plate with respect to cathode

d. positive voltage applied across the load resistor

1933. The equation that defines the dc plate resistance of a vacuum tube.

a. Eb/Ib

b. Ib^2 x Eb

c. Ib x Eb

d. Ib/Eb

1934. The voltage on the suppressor grid of a pentode is generally

a. + cathode

b. - cathode

c. zero cathode

d. at zero potential

1935. Which of the following defines the amplification factor of a vacuum tube?

a. deltaEb/deltaEc

b. deltaIb/deltaEb

c. deltaEc/deltaEb

d. deltaEb/deltaIb

1936. Which is the best tube for high frequency amplification?

a. triode valve

b. tetrode valve

c. pentode valve

d. diode valve

1937. A triode is normally operated with control grid at _____ potential with respect to cathode.

a. +

b. high +

c. zero

d. –

1938. Once a thyratron is fired, its control grid _____ over plate current.

a. loses all control

b. exercises rough control

c. exercises fine control

d. becomes helpless

1939. The _____ voltage should be reduced to zero to stop conduction in a thyratron.

a. grid

b. filament

c. plate

d. heater

1940. What is the typical value of ac plate resistance for a triode?

a. 1000 ohm(s)

b. 100 kohm(s)

c. 1,000 kohm(s)

d. 10 ohm(s)

1941. Direct coupling is used for _____ amplification.

a. very low frequency

b. radio frequency

c. audio frequency

d. ultra high frequency

1942. A vacuum diode acts as a rectifier because of its _____ conduction.

a. unidirectional

b. bidirectional

c. isotropic

d. omnidirectional

1943. Directly heated cathodes require _____ amount of heating power.

a. very small

b. large

c. small

d. very large

1944. A hard tube is defined as a tube with

a. a tungsten filament

b. a gas in the envelope

c. a metal envelope

d. no gas in the envelope

1945. What operation results in severest distortion?

a. Class C

b. Class B

c. Class A

d. Class AB

1946. What is the typical plate efficiency of class A amplifier?

a. 50%

b. 75%

c. 30%

d. 10%

1947. For the same plate dissipation, the output power of a class B push-pull circuit is nearly _____ that of class A operation.

a. 2 times

b. 4 times

c. 3 times

d. 5 times

1948. The screen grid potential is kept _____ plate potential.

a. somewhat lower than

b. same as

c. somewhere higher than

d. at zero potential with respect to

1949. The output stage of a practical amplifier always employs what coupling?

a. RC coupling

b. Transformer coupling

c. Direct coupling

d. Impedance coupling

1950. The plate resistance of a tube is mainly due to

a. space charge

b. electrodes of the tube

c. vacuum in the tube

d. gas in the tube

1951. A vacuum tube is a _____ device

a. linear

b. exponential

c. non-linear

d. bilateral

1952. What is the unit of transconductance?

a. ohm

b. Siemens/m

c. volt

d. Siemens

1953. Which provides the best frequency response?

a. transformer coupling

b. RC coupling

c. Direct coupling

d. Impedance coupling

1954. Voltage amplifiers are operated as _____ amplifiers.

a. Class A

b. Class B

c. Class C

d. Class AB

1955. The PIV of hot cathode gas diode is _____ the equivalent vacuum diode.

a. the same as that of

b. less than

c. more than

d. independent that of

1956. The anode-to-cathode potential of a gas-filled tube at which gas de-ionizes and stops conduction is called _____ potential.

a. extinction

b. ionizing

c. striking

d. reverse

1957. For the same plate voltage, a gas diode can conduct _____ the equivalent vacuum diode.

a. less current than

b. same current as

c. more current than

d. one-half the current than

1958. A thyratron can be used as

a. an oscillator

b. a controlled switch

c. an amplifier

d. an attenuator

1959. A pentode is a _____ device.

a. constant current

b. linear

c. constant voltage

d. bilateral

1960. The actual voltage gain of a triode amplifier is less than μ due to

a. grid being negative with respect to cathode

b. voltage drop in ac resistance of the tube

c. plate being positive with respect to cathode

d. voltage drop in dc resistance of the tube

1961. For faithful amplification, the control grid should be _____ with respect to cathode.

a. +

b. -

c. at zero potential

d. at infinite potential

1962. Which valve has the lowest amplification factor?

a. triode

b. pentode

c. tetrode

d. diode

1963. Which of the following would have the most effect on decreasing the life of a vacuum tube?

a. too much of a grid excitation

b. an excessive filament voltage

c. a grid current that is too low

d. a plate resistance value that is too high

1964. Valves in a radio receiver generally employ _____ heated cathodes.

a. directly

b. indirectly

c. oxide

d. nickel

1965. A vacuum diode acts as a _____ switch.

a. bidirectional

b. unidirectional

c. controlled

d. omnidirectional

1966. What can be used for proper high frequency amplification?

a. triode

b. tetrode

c. pentode

d. diode

1967. The indirectly heated cathode of the diode is coated with

a. thoriated tungsten

b. nickel

c. carbon

d. strontium or barium oxide

1968. What started the conduction in a cold cathode tube?

a. thermionic emission

b. natural sources

c. secondary emission

d. thermal sources

1969. Which emitter is most commonly used in the tubes of a radio receiver?

a. tungsten

b. oxide coated

c. thoriated tungsten

d. constantan

1970. What is the real measure of a valve's amplification capability?

a. plate resistance

b. transconductance

c. amplification factor

d. gain

1971. Field emission is utilized in the mechanism of

a. vacuum tubes

b. gas-filled tubes

c. mercury pool devices

d. TV picture tubes

1972. A vacuum tube is normally operated in the temperature saturation region.

a. to protect against filament aging

b. to keep the tube envelope hot

c. to disperse the space charge

d. keep the tube envelope cold

1973. Plate saturation results when

a. filament voltage is too high

b. space-charge region is depleted

c. plate temperature is too low

d. space-charge region is saturated

1974. When the control grid of a triode is operated with positive potential with respect to cathode

a. the grid resistance decreases

b. the grid may overheat

c. the plate current decreases sharply

d. the grid resistance increases

1975. What is the solid state equivalent of cold cathode diode?

a. Zener diode

b. LED

c. varactor

d. photodiode

1976. The noise in a gas-filled tube is _____ that of a vacuum tube.

a. the same as

b. less than

c. more than

d. very much smaller than

1977. What is the phase difference of the output and input voltage of a grounded-cathode amplifier?

a. 90 degrees

b. 360 degrees

c. 270 degrees

d. 180 degrees

1978. A grid controlled vacuum tube acts as

a. an amplifier

b. a controlled switch

c. a rectifier

d. an oscillator

1979. The filament voltage is a direct measure of

a. filament temperature

b. amplification

c. plate temperature

d. filament resistance

1980. The equation that defines the ac plate resistance of a vacuum tube?

a. deltaEb/deltaEc

b. deltaIb/deltaEc

c. deltaEb/deltaIb

d. deltaEc/deltaIb

1981. Ionization current which is a positive-ion current produced by collision between electrons and residual gas molecules in an electron tube is also called

a. plasma current

b. gas discharge

c. gas current

d. plasma discharge

1982. The transconductance of a pentode _____ a triode

a. is more than that of

b. is about the same as for

c. is less than that of

d. is not comparable to that of

1983. The electrons emitted by a thermionic emitter are called

a. free electrons

b. thermionic electrons

c. loose electrons

d. bound electrons

1984. The unit of work function of metals.

a. Joules

b. Watt-hour

c. Electron-volt

d. Watt

1985. What is the typical operating temperature of an oxide coated cathode?

a. 750 degrees C

b. 500 degrees C

c. 1200 degrees C

d. 1000 degrees C

1986. What is the amount of additional energy required to emit an electron from the surface of a metal?

a. surface barrier

b. threshold level

c. work function

d. potential

1987. Oxide coated emitters have electron emission of _____ per watt of heated power.

a. 5-10 A

b. 50-100 A

c. 50-150 A

d. 150-1000 A

1988. What is a pentragrid converter?

a. a tube with a total of five electrodes

b. a tube with a total of five grids

c. a tube that can be used for frequency conversion

d. a tube that requires twice as much plate voltage as a single triode

1989. Which emission is most widely used in practice?

a. field

b. secondary

c. thermionic

d. photo

1990. What is the work function of an oxide coated cathode?

a. 4.0 electron-volts

b. 2.63 electron-volts

c. 4.52 electron-volts

d. 1.1 electron-volts

1991. A directly heated cathode has _____ warm-up time.

a. zero

b. large

c. small

d. very large

1992. Which thermionic emitter has the highest operating temperature?

a. oxide coated

b. tungsten

c. thoriated-tungsten

d. eureka

1993. The internal resistance after ionization of a gas-filled tube is

a. low

b. very high

c. high

d. 0

1994. One advantage of a mercury vapor diode over the high rectifier is

a. its higher peak inverse voltage rating

b. its reduced rf interference effect

c. its lower voltage drop when the plate current is flowing

d. the elimination of the need for a warm up period

1995. The screen grid is used to

a. increase the capacitance between the second grid and the plate

b. decrease the capacitance between the control grid and the plate

c. reduce the secondary emission effect

d. lower the tube's plate resistance

1996. A tube tester is used to check a triode's transconductance, which is the ratio of

a. a small change in cathode current to the corresponding small change in grid current

b. a small change in plate current to the corresponding small change in grid current

c. a small change in plate voltage to the corresponding small change in plate current

d. a small change in plate voltage to the corresponding small change in plate current

1997. Which emitter is used in high voltage (> 10 kV) applications?

a. tungsten

b. oxide coated

c. thoriated-tungsten

d. constantan

1998. Which of the following is a desirable characteristic of an emitter?

a. large work function

b. small work function

c. very large work function

d. very small work function

1999. Secondary emission effects are undesirable in

a. vacuum tubes

b. gas-filled tubes

c. I.Cs

d. transistors

2000. When a thyratron tube has fired, one thing that will cause it to stop conducting is

a. a more positive voltage on the plate

b. a more negative voltage on the control electrode

c. a more positive voltage on the control electrode

d. a negative voltage on the plate

2001. What would cause the plate current to increase in a pentode tube?

a. a short circuit between the plate and the screen grid

b. an open circuit in the lead that is connected to the control grid

c. a short circuit between the suppressor grid and the cathode

d. a short circuit between the control grid and the cathode

2002. In directly heated cathode, filament and cathode are

a. separate components

b. same components

c. made of metals

d. made of alloys

2003. What is provided by transformer coupling?

a. impedance matching

b. step-up in voltage

c. good frequency response

d. stability of gain

2004. What is one advantage of a pentode tube over a triode?

a. lower input impedance

b. lower output impedance

c. less noise internally generated

d. less control grid to plate capacitance

2005. The load resistance Rl in a triode amplifier should be nearly _____ for good amplification.

a. 1/2 rp

b. 3 rp

c. rp

d. 2 rp

2006. A voltage amplifier is designed to have

a. high μ and Rl

b. low μ and high Rl

c. high rp and low Rl

d. high μ and low Rl

2007. What transformer secondary voltage is utilized in a center tapped circuit?

a. 1/2

b. 1/3

c. full

d. 1/8

2008. Class C amplifiers are used as _____ amplifiers.

a. audio-frequency voltage

b. radio-frequency

c. audio-frequency power

d. audio-frequency current

2009. The typical application of a cold cathode tube is a

a. diode

b. tetrode

c. triode

d. pentode

2010. Vacuum tube rectifiers are _____ affected by the changes in temperatures.

a. not

b. highly

c. greatly

d. severely

2011. The internal resistance of a gas-filled tube is _____ that of a vacuum tube.

a. the same as

b. less than

c. more than

d. dependent

2012. The ionization potential in a gas diode depends upon

a. plate current

b. size of the tube

c. cathode construction

d. type and pressure of gas

2013. When the gas pressure in a gas-filled diode is increased, its PIV rating.

a. remains unchanged

b. decreases

c. increases

d. becomes infinite

2014. Ionization of cold cathode diode takes place at _____ plate potential compared to hot cathode gas diode.

a. the same

b. much lower

c. much higher

d. zero

2015. A cold cathode diode is used as _____ tube.

a. a rectifier

b. a regulating

c. a power-controlled

d. an amplifying

2016. For a conventional vacuum tube used in the uhf band.

a. the electron transit time becomes critical

b. the distance between the control grid and the plate must be increased

c. the physical size of the tube must be increased

d. only a pentode can be used because of noise effects