1. What is the degree of exactness of measurement when compared to the expected value of the variable being measured?
   A. Accuracy
   B. Error
   C. Deviation
   D. Precision
   ANSWER: A

2. The art or process of determining the existence or knowing the magnitude of something, directly or indirectly in terms of a recognized standard.
   A. Measurement
   B. Testing
   C. Recording
   D. Evaluating
   ANSWER: A

3. A procedure or sequence of operations for determining whether a component or equipment is functioning or working normally.
   A. Measurement
   B. Test
   C. Recording
   D. Evaluating
   ANSWER: B

4. In measurement, what do you call the degree of exactness compared to the expected value of the variable being measured?
   A. precision
   B. accuracy
   C. sharpness
   D. correctness
   ANSWER: B

5. A measure of consistency or repeatability of measurements is called
   A. precision
   B. accuracy
   C. sharpness
   D. correctness
   ANSWER: A

6. Precision is also known as
   A. correctness
   B. accuracy
   C. sharpness
   D. reproducibility
   ANSWER: D

7. In measurements, the sum of a set of numbers divided by the total number of pieces of data in the given set is called
   A. geometric mean
   B. algebraic mean
   C. arithmetic mean

D. effective value

ANSWER: C

8. The deviation of a reading from the expected value
   A. accuracy
   B. precision
   C. error
   D. difference

   ANSWER: C

9. Errors due to frictions of the meter movement, incorrect spring tension, improper calibration or faulty instruments:
   A. Observational errors
   B. Environmental errors
   C. Instrument errors
   D. Gross errors

   ANSWER: C

10. When an instrument is subjected to harsh environments such as high temperature, strong magnetic, electrostatic or electromagnetic field, it may have detrimental effects and cause errors known as
    A. Observational errors
    B. Environmental errors
    C. Instrument errors
    D. Gross errors

    ANSWER: B

11. Errors introduced by the observer or user.
    A. Observational errors
    B. Environmental errors
    C. Instrument errors
    D. Gross errors

    ANSWER: A

12. Errors in analog meter reading due to your physical position with respect to the meter scale.
    A. parallax error
    B. angular error
    C. linear error
    D. deviation

    ANSWER: A

13. What do you call the difference between any number within the set of numbers and the arithmetic mean of that set of numbers?
    A. parallax error
    B. angular error
    C. linear error
    D. deviation

    ANSWER: D

14. An instrument or device having recognized permanent or stable value that is used as a reference.
    A. standard instrument/device
    B. reference instrument/device
    C. fixed instrument/device
    D. ideal instrument/device
    ANSWER: A

15. The smallest change in a measured variable to which an instrument will respond.
    A. quantize value
    B. resolution
    C. minimum
    D. step size
    ANSWER: B

16. A device or mechanism used to determine the value of a quantity under observation.
    A. measuring kit
    B. evaluator
    C. instrument
    D. sensor
    ANSWER: C

17. What is the basic unit for measuring current flow?
    A. coulomb
    B. ampere
    C. atomic weight
    D. volt
    ANSWER: B

18. An instrument used to detect and measure the presence of electrical current is generally called
    A. D'Arsonval meter
    B. electrodynamometer
    C. galvanometer
    D. potentiometer
    ANSWER: C

19. What is the common type of meter movement?
    A. Fixed coil
    B. Farad
    C. D'Arsonval
    D. Digital
    ANSWER: C

20. A permanent-magnet moving-coil instrument.
    A. induction instrument
    B. D'Arsonval meter movement
    C. moving-iron instrument
    D. moving-magnet instrument
    ANSWER: B

21. An instrument which depends on current in one or more foxed-coils acting on one or more pieces of soft iron, at least one of which is movable.
    A. moving-magnet instrument
    B. moving-iron instrument
    C. D'Arsonval meter movement
    D. induction instrument

    ANSWER: B

22. What is that device, which depends on the action of a movable permanent magnet, in aligning itself in the resultant field, produced either by a fixed permanent magnet and adjacent coil or coils carrying current, or by two or more current-carrying coils whose axes are displaced by a fixed angle?
    A. D'Arsonval meter movement
    B. induction instrument
    C. moving-magnet instrument
    D. moving-iron instrument

    ANSWER: C

23. What ammeter is mostly used in measuring high-frequency currents?
    A. electrostatic
    B. moving-coil
    C. dynamometer
    D. thermocouple

    ANSWER: D

24. Measurement of high dc-voltages is usually done by using
    A. Electrostatic
    B. moving-coil
    C. dynamometer
    D. thermocouple

    ANSWER: A

25. Measuring instrument that can be used only to measure voltages.
    A. electrostatic
    B. thermocouple
    C. dynamometer
    D. permanent-magnet moving-coil

    ANSWER: A

26. This instrument measures temperatures by electric means, especially temperatures beyond the range of mercury thermometers.
    A. pyrometer
    B. electrostatic instrument
    C. moving-magnet instrument
    D. permanent-magnet moving-coil instrument

    ANSWER: A

27. This instrument refers to that one, which measures the intensity of the radiation, received from any portion of the sky.
    A. megaohmmeter
    B. pyranometer

C. Megger
D. galvanometer
ANSWER: B

28. What is the normal indication on a megger (megohmmeter) when checking insulation?
A. one
B. infinity
C. middle of scale
D. zero
ANSWER: B

29. Resistance measuring instrument particularly used in determining the insulation resistance.
A. megaohmmeter
B. Megger
C. galvanometer
D. A or B are correct
ANSWER: D

30. An electrodynamic meter used to measure power
A. hook-on type voltmeter
B. wattmeter
C. watt-hour meter
D. multi-meter
ANSWER: B

31. A device used to mechanically measure the output power of a motor.
A. dynamometer
B. Megger
C. concentric-vane instrument
D. radial-vane instrument
ANSWER: A

32. An indicating instrument whose movable coils rotate between two stationary coils, usually used as wattmeter.
A. induction-type meter
B. radial-vane instrument
C. electrodynamometer
D. concentric-vane instrument
ANSWER: C

33. Dynamometers are mostly used as
A. voltmeter
B. ammeter
C. ohmmeter
D. wattmeter
ANSWER: D

34. What damping method is generally used in dynamometers?
A. spring
B. fluid friction

C. eddy-current damping
D. air friction
ANSWER: D

35. Which dynamometer instrument has a uniform scale?
A. voltmeter
B. ammeter
C. ohmmeter
D. wattmeter
ANSWER: D

36. For a dynamometer to be able to measure high current, a _____ should be used.
A. shunt resistor
B. multiplier
C. CVDT
D. current transformer
ANSWER: D

37. Error in voltmeter reading is due to
A. insertion
B. loading
C. battery aging
D. conversion
ANSWER: B

38. Error in ammeter reading id due to
A. insertion
B. loading
C. battery aging
D. conversion
ANSWER: A

39. Which type of meter requires its own power source?
A. A voltmeter
B. An ammeter
C. An ohmmeter
D. A wattmeter
ANSWER: C

40. Error in ohmmeter reading is due to
A. insertion
B. loading
C. battery aging
D. meter friction
ANSWER: C

41. Decreasing the value of the shunt resistor of an ammeter, its current measuring capability
A. increases
B. decreases
C. remains constant

D. none of the above
ANSWER: A

42. Increasing the value of the series resistor of a voltmeter, its voltage measuring capability
A. increases
B. decreases
C. remains constant
D. none of the above
ANSWER: A

43. A device that is used to measure current without opening the circuit
A. megger test
B. clamp probe
C. ammeter
D. multi-meter
ANSWER: B

44. Which of the ammeter below that has no insertion error?
A. D'Arsonval meter
B. clamp-meter
C. micrometer
D. meter with current transformer
ANSWER: B

45. To prevent damage of the multirange ammeter during selection, a/an _____ should be used.
A. direct shunt
B. selected shunt
C. Ayrton shunt
D. shunt fuse
ANSWER: C

46. For the greatest accuracy, what should be the input impedance of a VOM be?
A. 1,000 ohms/V
B. 50,000 ohms/V
C. as large as possible
D. as small as possible
ANSWER: C

47. Voltage measurement in a high impedance circuit requires a voltmeter with
A. low input impedance
B. high input impedance
C. high voltage probe
D. low voltage probe
ANSWER: B

48. A meter has a full-scale current of 50μA, what is its sensitivity?
A. 20kΩ/V
B. 20V/Ω
C. 50kΩ/V
D. 50μA/V

ANSWER: A

49. If a meter with a full-scale current of 100μA is used as an ac voltmeter with half-wave rectification, its ac sensitivity is
    A. 10,000 Ω/V
    B. 4,500 Ω/V
    C. 9,000 Ω/V
    D. 100 Ω/V
    ANSWER: B

50. In order to make an accurate measurement as possible, the internal resistance of a voltmeter must be
    A. as high as possible
    B. as low as possible
    C. proportional to the voltage range
    D. proportional to the current range
    ANSWER: A

51. An ammeter has a full-scale deflection current of 100mA. If the same ammeter is used to measure a full-scale current of 1.0 ampere, what is the value of the shunt resistor in ohms if the voltage across the meter is 9.0 volts?
    A. 9.0
    B. 10
    C. 900
    D. 100
    ANSWER: B

52. What is the purpose of the rheostat in ohmmeter?
    A. balancing resistance
    B. counter resistance of measured circuit
    C. coil resistance
    D. compensate aging battery of the meter
    ANSWER: D

53. The zero-adjust control in an analog type ohmmeter is used to
    A. compensate for the differing internal battery voltage
    B. make sure the pointer is moving correctly
    C. align the infinity resistance position
    D. align the zero-voltage position
    ANSWER: A

54. The scale of a hot wire instrument is a/an _____ function.
    A. linear
    B. squared
    C. log
    D. exponential
    ANSWER: B

55. Moving iron instrument have a scale function that is
    A. log
    B. exponential

C. linear
D. squared
ANSWER: D

56. To increase the measuring capability of a moving-iron ac ammeter, a _____ should be used.
A. shunt
B. multiplier
C. swamping resistors
D. different number of turns of operating coil
ANSWER: D

57. Which electrical instruments below is the most sensitive?
A. moving-iron
B. dynamometer
C. thermocouple
D. PMMC
ANSWER: D

58. Basically, a PMMC instrument can be used only in
A. ac measurements
B. dc measurements
C. rms measurements
D. all of the above
ANSWER: B

59. Controlling torque in PMMC.
A. spring action
B. magnetic action
C. electromagnetic action
D. tension cable
ANSWER: A

60. What damping method is used in induction type ammeters?
A. air friction
B. electrostatic damping
C. fluid friction
D. eddy current damping
ANSWER: D

61. Induction type instruments are mostly used as
A. voltmeter
B. ammeter
C. wattmeter
D. watt-hour meter
ANSWER: D

62. In indicating instruments, what will happen to the controlling torque if the deflection becomes greater?
A. increases
B. decreases

C. remains unchanged
D. drops to zero

ANSWER: A

63. The force(s) that is(are) acting on the pointer of an indicating instrument as it rest on its final deflected position. (Note: damping torque is 0).
    A. controlling torque
    B. deflecting torque
    C. damping torque
    D. A & B above

ANSWER: D

64. What is(are) the force(s) acting on the pointer of an indicating instrument when it is in motion?
    A. controlling and deflecting torques
    B. damping and deflecting torques
    C. controlling and damping torques
    D. controlling, damping, deflecting torques

ASNWER: D

65. Material that is mostly used as a pointer in indicating instruments.
    A. soft iron
    B. aluminum
    C. silver
    D. stainless

ANSWER: B

66. A Kelvin electrostatic voltmeter uses what method of damping?
    A. fluid friction
    B. spring action
    C. mechanical friction
    D. eddy-current damping

ANSWER: A

67. Shunts in meters should have a _____ temperature coefficient of resistance.
    A. positive
    B. negative
    C. very small
    D. very large

ANSWER: C

68. In a moving coil ammeter, a _____ is connected in series with the soil to compensate for temperature variations.
    A. limiting resistor
    B. shunt resistor
    C. multiplier
    D. swamping resistor

ANSWER: D

69. Where can we use the dynamometer?
    A. dc only

B. ac only
C. dc and ac
D. peak measurement

ANSWER: C

70. What is the meter that depends for its operation on the forces of attraction and repulsion between electrically charged bodies?
A. induction instrument
B. electrostatic instrument
C. moving-magnet instrument
D. D'Arsonval meter movement

ANSWER: B

71. What do you call of an instrument that depends for its operation on the reaction between magnetic flux set up by currents in fixed windings and other currents set up by electromagnetic induction in movable conducting parts?
A. induction instrument
B. electrostatic instrument
C. moving-magnet instrument
D. D'Arsonval meter movement

ANSWER: A

72. A meter for its operation, it depends on a movable iron vane which aligns itself in the resultant field of a permanent magnet and an adjacent current carrying coil.
A. induction instrument
B. electrostatic instrument
C. moving-magnet instrument
D. permanent-magnet moving coil-instrument

ANSWER: D

73. What is the measuring instrument that uses the force of repulsion between fixed and movable magnetized iron vanes, or the force between a coil and a pivoted vane-shaped piece of soft iron to move the indicating pointer?
A. pyrometer
B. vane-type instrument
C. electrostatic instrument
D. moving-magnet instrument

ANSWER: B

74. It's an electrostatic voltmeter in which an assembly of figure – 8 – shaped metal plates rotates between the plates of a stationary assembly when a voltage is applied between the assemblies. The length of the arc of rotation is proportional to the electrostatic attraction and thus, to the applied voltage.
A. varmeter
B. variometer
C. potentiometer
D. Kelvin voltmeter

ANSWER: D

75. What is that instrument used for measuring the strength and direction of magnetic fields?
A. varmeter

B. potentiometer
C. magnetometer
D. Kelvin voltmeter

ANSWER: C

76. What do you call of that instrument used for measuring reactive power in vars?
A. varmeter
B. pyrometer
C. reactive volt-ampere meter
D. A or C is correct

ANSWER: D

77. What is this instrument or circuit that has four or more arms, by means of which one or more of the electrical constants of an unknown component may be measured?
A. bridge
B. Hazeltine circuit
C. Loftin – White circuit
D. D'Arsonval meter movement

ANSWER: A

78. A four-arm bridge. Al arms of which are predominantly resistive; used for measuring resistance.
A. bridge
B. resistance bridge
C. Wheatstone bridge
D. B or C is correct

ANSWER: D

79. This is the method of using a Wheatstone bridge to determine the distance from the test point to a fault in a telephone or telegraph line or cable.
A. Mesh
B. Varley loop
C. Batten system
D. Cordonnier system

ANSWER: B

80. This refers to a four-arm ac bridge used for measuring inductance against a standard capacitance.
A. Maxwell bridge
B. slide-wire bridge
C. resistance bridge
D. Wheatstone bridge

ANSWER: A

81. Refers to an ac bridge for measuring the inductance and Q of an inductor in terms of resistance, frequency and a standard capacitance.
A. Hay bridge
B. Maxwell bridge
C. slide-wire bridge
D. Wheatstone bridge

ANSWER: A

82. This is a special bridge for measuring very low resistance (0.1Ω or less). The arrangement of the bridge reduces the effects of contact resistance, which causes significant error when such low resistances are connected to conventional resistances bridges.
    A. Hay bridge
    B. Maxwell bridge
    C. Wheatstone bridge
    D. Kelvin double bridge

    ANSWER: D

83. A type of four-arm capacitance bridge in which the unknown capacitance is compared with a standard capacitance. This bridge is frequently employed in testing electrolytic capacitors, to which a dc polarizing voltage is applied during the measurement. What is this bridge?
    A. Hay bridge
    B. Maxwell bridge
    C. Schering bridge
    D. Wheatstone bridge

    ANSWER: C

84. What do you call of that frequency-sensitive bridge in which two adjacent arms are resistances and the other two arms are RC combinations?
    A. Hay bridge
    B. Wein bridge
    C. Maxwell bridge
    D. Schering bridge

    ANSWER: B

85. When the capacitors of a Wein bridge are replaced by inductors, the bridge becomes
    A. Wein-bridge filter
    B. variometer
    C. Schering bridge
    D. Wein inductance bridge

    ANSWER: D

86. A simplified version of the Wheatstone bridge wherein, two of the ratio arms are replaced by a 100 cm long Manganin of uniform cross-sections and provided with a slider.
    A. Hay bridge
    B. Schering bridge
    C. slide-wire bridge
    D. Wein inductance bridge

    ANSWER: C

87. Bridge used to measure both inductive and capacitive impedances at higher frequencies.
    A. Hay bridge
    B. Schering bridge
    C. Wein bridge
    D. radio-frequency bridge

    ANSWER: D

88. A bridge wherein all legs are electrically identical
    A. balance bridge
    B. balance circuit
    C. balance line
    D. all of the above
    ANSWER: A

89. Comparison between dc and ac measuring instruments
    A. generally, ac instruments are less sensitive than dc instruments
    B. errors such as induced emfs, frequency variations, and harmonic-current components are only present in ac instruments
    C. in ac instruments, higher value of current is needed than in dc instruments to produce the same deflection
    D. all of these are correct
    ANSWER: D

90. What is an electronic instrument capable of showing on screen and maybe on print, relative spacing of transmitter carriers, their sidebands and harmonics?
    A. Counters
    B. Spectrum analyzer
    C. Triggered oscilloscope
    D. Multimeter
    ANSWER: B

91. An instrument capable of displaying simultaneously the amplitude of signals having different frequencies.
    A. oscilloscope
    B. spectrum analyzer
    C. VTVM
    D. Logic analyzer
    ANSWER: B

92. Spectrum analyzer is
    A. a real-time analyzer
    B. a non-real time analyzer
    C. the same as a wave analyzer in all aspects
    D. an instrument not dependent on frequency
    ANSWER: A

93. Indications of spectrum analyzer is presented by means of
    A. a moving meter
    B. an iron vane
    C. a CRT
    D. a LED
    ANSWER: C

94. An electronic measuring device that provide instantaneous visual indication of voltage excursions.
    A. voltmeter
    B. power meter
    C. oscilloscope

D. power line meter
ANSWER: C

95. An instrument that is capable of displaying waveforms by means of fluorescence in a CRT.
A. oscilloscope
B. wave analyzer
C. spectrum analyzer
D. distortion analyzer
ANSWER: A

96. Types of oscilloscopes that are able retain the display for a longer period for analysis. The display is retained by the use of flood gun.
A. sampling oscilloscope
B. digital storage oscilloscope
C. storage oscilloscope
D. delayed sweep oscilloscope
ANSWER: C

97. What do call an oscilloscope that uses sampling technique in processing signals having frequencies beyond its normal capabilities?
A. sampling oscilloscope
B. digital storage oscilloscope
C. storage oscilloscope
D. delayed sweep oscilloscope
ANSWER: A

98. Generally, oscilloscope uses what type of deflection?
A. magnetic deflection
B. electromagnetic deflection
C. static deflection
D. electrostatic deflection
ANSWER: D

99. A device or instrument, which delivers signals of pre3cise frequency and amplitude, usually over a wide range.
A. synthesizer
B. frequency generators
C. signal generators
D. modulators
ANSWER: C

100. The two most common audio oscillators are
A. Wein bridge and Colpitts
B. Wein bridge and phase-shift
C. Colpitts and Hartley
D. Hartley and phase-shift
ANSWER: B

101. What are the two most popular RF oscillators
A. Wein bridge and Colpitts

B. Wein bridge and phase-shift
C. Colpitts and Hartley
D. Hartley and phase-shift

ANSWER: C

102. A device or instrument able to generate noise with accurate voltage for test purposes.
A. signal generator
B. synthesizer
C. frequency generator
D. noise generator

ANSWER: D

103. When do you need a noise generator?
A. When starting an oscillators
B. When evaluating noise performance of an oscillator
C. When evaluating noise characteristics of an amplifier
D. When performing modulation analysis

ANSWER: C

104. In RF or microwave system, what instrument is used to measure the incidental and reflected signals.
A. oscilloscope
B. reflectometer
C. incident-wave meter
D. spectrum analyzer

ANSWER: B

105. A type of photometer used to measure reflection.
A. photodiode
B. reflectometer
C. incident-wave meter
D. LED

ANSWER: B

106. A tunable RF instrument, which, by means of a sharp dip of an indicating meter, indicates resonance with an external circuit under test.
A. reflectometer
B. inclinometer
C. dip meter
D. Grid-dip meter

ANSWER: C

107. A type of dip meter employing a vacuum tube oscillator, whose indicating dc microammeter is in the grid circuit.
A. reflectometer
B. inclinometer
C. dip meter
D. Grid-dip meter

ANSWER: D

108. In meter movement, how do you prevent the meter from oscillation and overswing?

A. by shorting
B. by coupling
C. by swamping
D. by damping

ANSWER: D

109. When the meter is insufficiently damped, it is considered as
A. underdamped
B. overdamped
C. critically damped
D. negatively damped

ANSWER: A

110. A meter when _____ damped will become insensitive to small signals.
A. underdamped
B. overdamped
C. critically damped
D. negatively damped

ANSWER: B