Jain College, Jayanagar
II PUC Mock Paper - I Jan -2020
Subject: Electronics (40)

Max. Marks: 70

PART – A

Answer all the questions. **(1 X 10 = 10)**

1. Name the biasing circuit which gives excellent stabilization.
2. Mention any one application of open loop op-amp.
3. Mention the intermediate frequency of an AM superheterodyne receiver.
4. What is a radio horizon?
5. Write the symbol of n-channel enhancement type MOSFET
6. What is a redundant group?
7. How many flipflops are required to construct a counter which counts from 0 to 15
8. How many register banks are present in 8051 microcontroller.
9. Give an example for Unary operator.
10. Expand CDMA

PART – B

Answer any five of the following. **(2 X 5 = 10)**

11. Explain the terms
    a. Drain resistance
    b. Trans conductance
12. What are the advantages of RC coupled amplifier?
13. In a –ve feedback amplifier, f_l =100Hz, A=100. Determine f_H when –ve feedback FB with β = 0.01 is applied.
14. Write circuit symbol of electrical equivalent of a crystal.
15. What is single hop & multi hop transmission?
16. Why the power semiconductor devises are used in power control circuits?
17. Write any two instructions which make the content of accumulator zero.
18. Write any two advantages of digital cell phone system?

PART – C

Answer any five of the following. **(3 X 5 = 15)**

19. Derive the equation to determine coordinates of Q points in the voltage divider bias circuit.
20. Give any three differences between +ve FB & -ve FB.
21. Define
    a. Critical angle
    b. Noise figure
    c. Sensitivity of receiver
22. Draw the circuit of ac power control using TRIAC and the input-output waveforms.

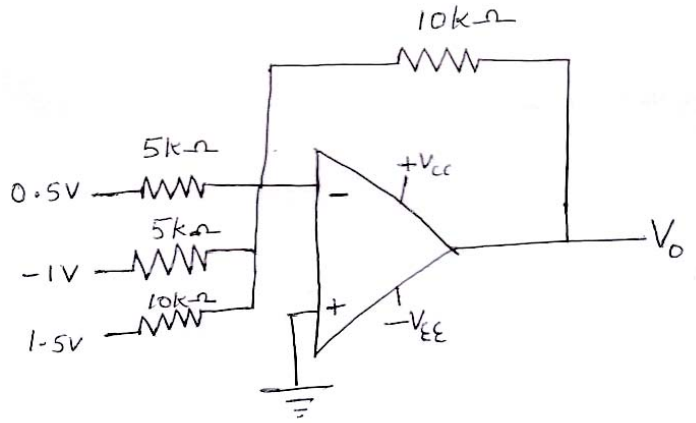
23. At what firing angle does SCR of full wave rectifier must be triggered to supply V_{dc} of 80V to a load? Given $V_m = 160V$

24. Draw the circuit of
    a. OR gate using NAND gates
    b. NOT gate using NOR gate
    c. AND gate using NAND gates
25. Write a C program to print the area and perimeter of a circle whose radius is 5 cm.
26. Mention any three types of network protocols.

PART - D

Answer any three of the following. **(5X 3 = 15)**

27. An RC coupled amplifier has a voltage gain of 2000. The lower and upper 3dB frequencies are 100Hz & 100KHz respectively. Find the gain, lower 3dB frequency, upper 3dB frequency and bandwidth if 15% -ve feedback is introduced.
28. Find the output of the following circuit.



29. The time period of Wien Bridge oscillator is 1ms. Calculate the value of R if C=0.01μF (Consider $R_1 = R_2 = R$ and $C_1 = C_2 = C$)
30. An FM wave with resting frequency of 30MHz, deviates to 12KHz by a modulating signal of frequency 4KHz. If the amplitude of the carrier is 3V, write the equation of FM wave.
31. Simplify using k-map:
    $Y = \sum m(0,1,2,3,4,6,9,11) + \sum d(8,15)$
    Draw the circuit using NAND gates only.

PART –E

Answer any four of the following. **(5X 4 = 20)**

32. Explain the working of CC amplifier. Mention any one application.
33. What is an opamp differentiator? Draw the circuit and derive an expression for the output voltage of a differentiator.
34. With neat diagram explain the working of linear diode AM detector.
35. a) Draw the circuit of Full adder using Half adders & OR gates (2)
    b) Convert $(10110)_2$ to Gray code. Draw the code convertor circuit for the same. (3)
36. Two 8 bit numbers are stored in the resisters r_0 & r_1. Write an 8051 assembly level program to add them & place the result in the register R_2 as well as in the RAM location 71_H
37. Explain the structure of C program.

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