SRI BHAGAWAN MAHAVEER JAIN COLLEGE Vishweshwarapuram, Bangalore. **Mock Question Paper 1** – January 2020	**Course:** II year PUC **Subject:** Electronics **Max. Marks:** 70 **Duration:** 3.15hrs.

PART-A

I. Answer all questions. **10x1=10**

1. Write the relation between JFET parameters.
2. Name the biasing circuit which gives excellent stabilization.
3. Define slew rate.
4. Which layer of ionosphere is called Kennelly-Heaviside layer?
5. The maximum and minimum amplitude of a sinusoidal modulated wave are 4V and 1V. Determine the percentage modulation.
6. Define image frequency.
7. Which code is used in shaft position encoders?
8. What is a counter?
9. How many 8-bit ports are present in 8051 microcontroller?
10. Mention the size of memory allocated for a character (char) type data in C-programming.

PART-B

II. Answer any FIVE questions. **5x2=10**

11. What is thermal runaway? Explain.
12. What is cross-over distortion? Sketch the graph showing cross-over distortion.
13. An amplifier has a gain of 600 with feedback ratio of 5%. Calculate the gain and output impedance with negative feedback. Given output impedance without feedback is 200Ω.
14. Explain briefly the conditions of Barkhausen criteria.
15. Draw the structure of power diode showing impurity atom densities.
16. Briefly explain data transfer instruction.
17. Write the syntax of 'if-else' statement.
18. Expand ISP and URL with reference to internet.

PART-C

III. Answer any FIVE questions. **5x3=15**

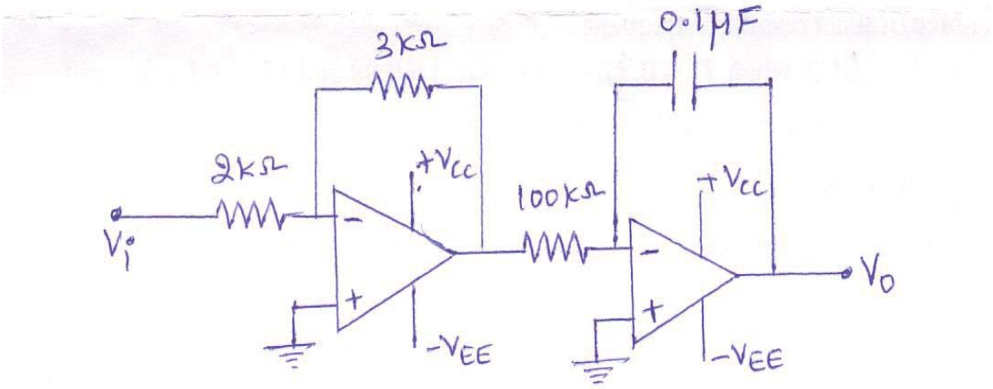
19. Briefly explain the working of n-channel JFET.
20. Derive an expression for voltage gain of voltage series negative feedback amplifier.
21. Define fading, skip distance and critical angle.
22. Write a note on the choice of local oscillator frequency.
23. Determine anode current I_A of SCR when $I_G = 0$. Given $(\alpha_1 + \alpha_2) = 0.98$ and $(I_{C01} + I_{C02}) = 1mA$.
24. An ac voltage v=230sin 314t is applied to SCR half-wave rectifier. If it has a firing angle of 30^0, determine V_{dc} and I_{dc}, when load resistance of 25Ω is connected.
25. Write the truth table, timing diagram and logic diagram of SISO register.
26. What is RADAR? Mention any two application of RADAR.

PART-D

IV. Answer any three questions. **3x5=15**

27. For a given CE amplifier using silicon transistor, calculate (a) V_2 (b)I_E (c)r_e^1 (d)$Z_{i(base)}$ and (e)A_V.
Given $V_{BE} = 0.68V, \beta = 200, V_{CC} = 15V, R_1 = 100k\Omega, R_2 = 10k\Omega, R_C = 2.2k\Omega, R_E = 1k\Omega, R_L = 5k\Omega$..

28. Find the output voltage of the following circuit, where $Vi = 5\sin 100\pi t$.



29. A Hartley oscillator generates 50kHz. If the capacitance of the capacitor used is 500pF. Calculate the inductance. If the split inductances are in the ratio 3:1, calculate each inductance and the minimum gain required.

30. A 25MHz carrier is modulated by 500Hz modulating signal. If the carrier voltage is 6V and maximum deviation is 10kHz, write the equation for the FM.
31. Simplify the Boolean function using k-map.
$f(A,B,C,D) = \sum m(0,2,4,6,7,8,10,12,13,14) + \sum d(5,15)$. Draw the logic circuit using NAND gates to realize the simplified expression.

PART-E

V. Answer any FOUR questions. **4x5=15**

32. Give the comparison between CB, CC and CE amplifiers on performance parameters.
33. With a neat circuit diagram, derive an expression for output voltage of logarithmic amplifier using Op-amp.
34. Explain the basic principle of super heterodyne AM receiver and explain the function of each block.
35. Explain the working of JK flip-flop with logic diagram, truth table and timing diagram.
36. Write an assembly language program to multiply 04H and 0AH. What are the contents of registers A and B after execution of the program?
37. Write a C-program to print the sum of first n integers.

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