



JAIN COLLEGE

463/465, 18th Main Road, SS Royal, 80 Feet Road, Rajarajeshwari Nagar,
Bangalore - 560 098

Date:

SUBJECT: ELECTRONICS

**II PUC
Mock paper II**

Timings Allowed: 3 Hrs 15 Minutes

Total Marks: 70

ISTRUCTIONS:

1. The question paper has five parts: A, B, C, D and E.
2. Part A is compulsory.
3. Part D has only problems.
4. Read the instructions given for each part.

Part A

I. Answer ALL Questions:

10x1=10

1. What is dc load line?
2. Define slew rate.
3. How many side bands are present in AM?
4. Find the value of frequency deviation. Given $m_f=12$ and $f_m=5$ KHz.
5. Expand TRIAC.
6. Define Max term.
7. What is a sequential logic circuit?
8. What is the need of clock circuit in microcontroller?
9. Where is conditional operator used?
10. Expand URL.

Part B

II. Answer any five questions:

5x2=10

11. Describe briefly the construction of N- channel JFET.
12. What is meant by heat sink? Mention its importance.
13. Draw the electric equivalent of a crystal.
14. Mention the Barkhausen criterion.
15. Define transmission efficiency and state its relation with m_a
16. Draw the schematic construction of SCR.
17. Write the syntax for "If - else" statement.
18. Mention few types of protocols used in computer networks.

Part C

III. Answer any five questions:

5x3=15

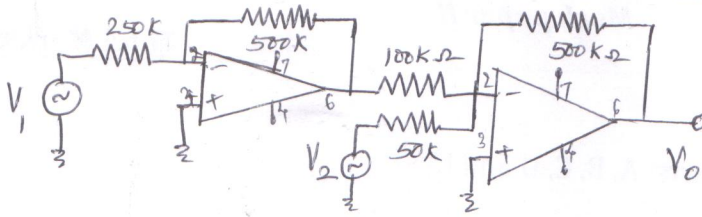
19. On the output characteristics of a transistor in CE mode, mark DC load line and different regions of transistor operation.
20. How is bandwidth of an amplifier affected by negative feedback? Explain.
21. Describe basic operation of reactance FM modulator.
22. Explain P⁺ and n⁻ junction under thermal equilibrium.
23. Determine V_{dc} and I_{dc} of SCR FWR. Given firing angle is 60° and peak voltage of ac input to the rectifier is 325.2 V and a rheostat load of 25Ω is connected.
24. Convert $A+BC+AB$ into canonical SOP and write the expression in min term designation.
25. Briefly explain bitwise operator.
26. Compare Wi-Fi and Bluetooth.

Part D

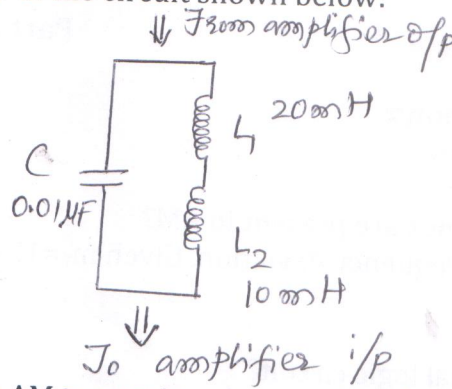
IV. Answer any three questions:

3x5=15

27. Find the input resistance and voltage gain of the CE transistor amplifier for the data given below:
 $R_1 = 47K \Omega$, $R_2 = 12K \Omega$, $R_C = 3.3K \Omega$, $R_E = 1K \Omega$, $R_L = 10 K \Omega$, $V_{CC} = 18 V$, $\beta = 100$, $V_{BE} = 0.3V$ and $r_e' = 52mV/I_E$.
28. Calculate the output voltage if $V_1 = 300mV$ and $V_2 = 700mV$.



29. Calculate the frequency and feedback factor of the circuit shown below:



30. When the modulation percentage is 75% an AM transmitter has carrier of 12 kW power, what would be the power carried by single side band?
31. Simplify the Boolean function $Y = \sum m(0, 2, 4, 6, 8, 10, 11, 12, 14, 15) + \sum d(9, 13)$ using K-map. Draw the logic circuit using NAND gate to realise the simplified expression.

Part E

5x4=20

V. Answer any four questions:

32. Explain the working of Direct coupled amplifier.
33. Derive an expression for the output voltage of a summing amplifier.
34. Compare AM and FM.
35. Draw the logic diagram of SIPO shift register, write its timing diagram and explain its working.
36. Draw the pin diagram of 8051 and label its parts.
37. What is debugging? Explain the different types of Error that occurs in C programming language.
