



**SRI BHAGAWAN MAHAVEER JAIN COLLEGE**

Vishweshwarapuram, Bangalore.

**Mock Paper-1**

**Course:** II PUC

**Subject:** Electronics

**Max. Marks:** 70

**Duration:** 3hrs

**Note:** 1) Question paper has **four** parts **A, B, C** and **D**.

2) Part - **A** is **compulsory**.

3) Part - **D** has **two** parts. Part- **I** is from **problems**.

Part- **II** is of **essay type** questions.

4) Circuit diagrams/timing diagrams/truth tables should be drawn **wherever** necessary.

5) Problems without **necessary** formula/formulae carry **no mark**.

### **PART- A**

**I.** Answer **all** questions:

**(10x1=10)**

1. Why FET is called as a unipolar junction device?
2. Define operating point?
3. How many op amp present in LM324?
4. What is resting frequency?
5. What is the frequency of FM SHD receiver?
6. Draw the symbol of SCR.
7. Write 2421 code for  $51_{(10)}$ .
8. What is latch in digital electronics?
9. What is the size of ROM in 8051?
10. If **int** a=4; **int** b=6; y=a\*b compute value of y in c programming.

### **PART- B**

**II.** Answer any **FIVE** questions:

**(5x2=10)**

11. What is  $V_{GS(off)}$ ? what is value of drain current when  $V_{GS} = 0$ ?
12. Draw the circuit diagram of class C amplifier with waveform.
13. An amplifier gain of 500 reduces to 100 after feedback. Calculate the feedback fraction?
14. Write circuit of Weinbridge oscillator with waveform.
15. Determine frequency of carrier and frequency of signal. Given  $\omega_c = 6 \times 10^6$  and  $\omega_m = 1250$ ?
16. Write the expression for load voltage and load current of SCR half wave rectifier with RC triggering circuit.
17. Briefly explain the function of (a) Accumulator and (b) program counter, with respect to microcontroller 8051.
18. Write any two C tokens.

### **PART- C**

**III.** Answer any **FIVE** questions:

**(5x3=15)**

19. Explain drain characteristics in JFET.
20. Write the block diagram of any three types of negative feedback connections.
21. Sketch electromagnetic wave. What is the speed of EM wave in free space?
22. Explain non-punch through type power diode.
23. Determine anode current  $I_A$  of SCR when  $I_G = 0$ . Given  $(\alpha_1 + \alpha_2) = 0.98$  and  $(I_{co1} + I_{co2}) = 1\text{mA}$ ?
24. Write the logic circuit and truth table of D flip flop using only NAND gates.
25. Write a c program to check whether two integers x and y are equal.
26. Write any three uses of fiber optics communication.

### **PART- D**

IV. Answer any **THREE** questions:

**(3x5=15)**

27. CE amplifier circuit using germanium transistor having the values,  $R_1=47K\Omega$ ,  $R_2=12K\Omega$ ,  $R_E=1k\Omega$ ,  $R_C=10k\Omega$ ,  $V_{CC}=18V$ ,  $\beta=150$ ,  $r_e=52mV/I_E$ . Calculate a)  $V_2$ , b)  $I_E$ , c)  $r_e$ , d)  $A_v$ , e)  $A_i$ .
28. Design an OpAmp circuit to realize the out put  $V_0=4V_1-3V_2+V_3$ . Assume  $R_f=10k$ .
29. A transistor Hartley oscillator has tank circuit consisting of  $L_1=0.1mH$ ,  $L_2=10mH$ ,  $C=0.1\mu F$ , determine the frequency of oscillation.
30. In FM modulation, the modulation index is 10 and the highest modulating signal frequency is 15 kHz. Calculate the approximate bandwidth of resultant FM signal and carrier swing.
31. Simplify  $Y(ABCD)=\sum m(4,5,7,9,11,12,13,15) + \sum_d m(1,3,8)$  using K-map and draw the logic circuit for the simplified expression using NAND gates only.

#### PART- D

V. Answer any **FOUR** questions:

**(4x5=20)**

32. Explain the working of direct coupled amplifier with neat circuit diagram, waveform and sketch the frequency response curve.
33. Write a circuit diagram of 4 bit DAC using R-2R ladder network. With explanation write the conversion of DAC.
34. Draw the block diagram of FM transmitter and explain each block.
35. Explain the working of SISO shift register with relevant diagram.
36. Write an assembly level language program to subtract 35H from 4AH and save the result into register R5.verify the content of R5 after executing the program.
37. Write the syntax of **for** loop and **switch** statement. Explain the same with example.

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