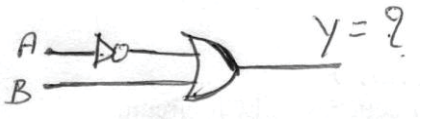
SRI BHAGAWAN MAHAVEER JAIN COLLEGE Vishweshwarapuram, Bangalore. **Mock Question Paper** – January 2020	**Course:** I year PUC **Subject:** Electronics **Max. Marks:** 70 **Duration:** 3:15 hrs

PART-A

I **Answer the following questions** **10 x 1 = 10**

1 What is the potential difference across a short circuit?
2 How many electrons are present in 1 C of charge?
3 What is the voltage across a fully charged capacitor of 10pF, when it is connected to a 10V supply?
4 Define time constaint of RC circuit.
5 What is the majority charge carrier in p type material.
6 Draw the circuit diagram of series +ve clipper.
7 What is the function of emitter in a transistor?
8 In which mode of operation the transistor can be used as an amplifier.
9 What is the output of a four inputs OR gate if the inputs are A, 1, 0, and $\overline{A}$?
10 Write the output expression.



PART-B

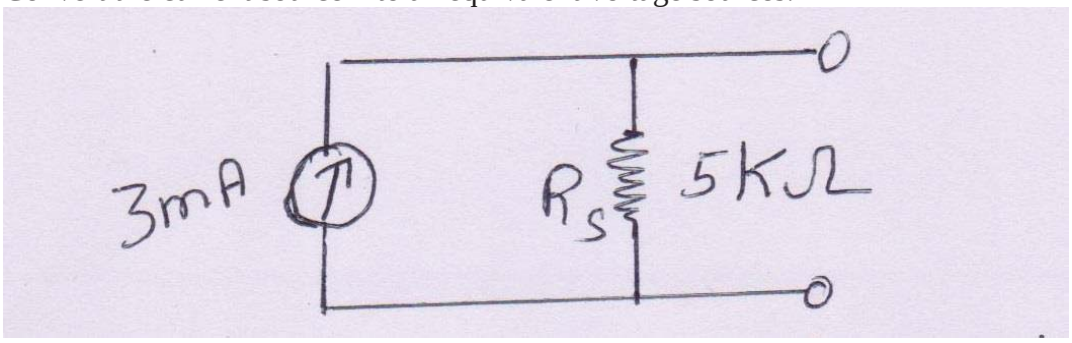
II **Answer only FIVE questions** **5 x 2 = 10**

11 Mention any two applications of ECG.
12 Define spygniomano meter and glucometer.
13 Define time constant of a RC circuit and write the expression for the time constant.
14 Draw the lattice structure of p type SC.
15 Explain about photo transistor.
16 A transistor has an emitter current of 3mA and a collector current of 2.95mA. Calculate the base current.
17 Distinguish between the digital and analog signals.
18 Prove that $A + \overline{A}B = A + B$.

PART-C

III **Answer only FIVE questions** **5 x 3 = 15**

19 a) Expand RADAR **1M**
b) Mention any two applications of electronics in communication system. **2M**
20 Write any three properties of charge.
21 Convert the current source into an equivalent voltage sources.



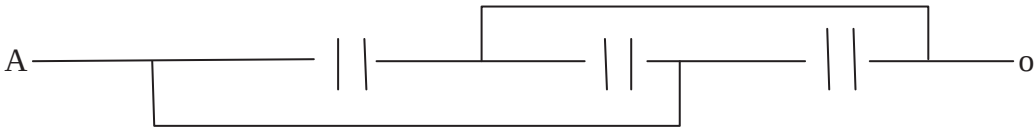
22 Derive an expression for effective capacitance of two capacitors connected in series.
23 Write any three applications of LCD.
24 With a diagram briefly explain the formation of depletion region in the un biased semiconductor diode.
25 Explain double dabble methods with example.
26 Write the steps used in the PCB fabrication.

PART-D

IV Answer any THREE for the following questions: 5 x 3 = 15

27 An immersion coil dissipates 125w, when a voltage of 220v is applied. Calculate the numbers of charger flowing for every 2 sec.

28 a) Calculate effective capacitance between A and B (Given C = 10μF)



2M

b) Determine the resistances of a copper wire of length 50 cm and diameter 2mm the resistivity of the wire 1.72×10^{-8} Ωm. **3M**

29 A series circuit with R = 100Ω, L = 10mH and C = 10μF is connected to a 230V, 50 AC source calculate impedance, current flowing through circuit and phase angle.

30 For a zener diode voltage regulator with applied voltage of V_s = 10V, series resistor of R_s = 50 V, Zener diode with zener voltage, V_z = 6v and load resistor R_L = 390Ω. Determine:
Load voltage, Voltage drop across series resistance, current through the zener diode and Minimum load resistance.

31 Subtract $(111)_2$ from $(1111)_2$ using 2's compliment continous method. Also verify the same by direct substraction method.

V Answer any FOUR questions: **5 x 4 = 20**

32 State and explain superposition theorem.

33 Explain the construction and working of moving coil loud speaker.

34 a) Explain about principle of transformer.

b) Does a transformer work on DC?

35 a) Draw the series resonant (series LCR circuit) **1M**

b) Find out the expression of impedance and resonant frequency of LCR circuit. **4M**

36 Explain the forward and reverse characteristics of a diode with neat circuit diagram and graph.

37 Explain diode AND gate with circuit diagram and Truth table.

****