MODEL QUESTION PAPER FOR SUMMATIVE ASSESSMENT

I P.U.C ELECTRONICS (40)

Time: 3 hours 15 minutes **Max Marks: 70**

PART-A

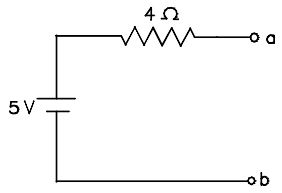
Answer any Eight of the following. **8X1=8**

1. Who predicted the existence of electromagnetic waves?
2. Define electron volt.
3. Name any one active component.
4. What is the maximum current that can be passed through 100 Ω resistor of wattage rating 2 W?
5. Determine frequency ac given by of v = 20sin(1000t).
6. Name minority carriers in n-type semiconductor.
7. What is the forward resistance of ideal diode?
8. Draw the symbol of Varactor diode.
9. How many bits are required to form a nibble?
10. Add $[1101]_2$ and $[1111]_2$.

Part-B

Answer any Seven of the following. **7X2=14**

11. Write any four applications of internet.
12. Convert the voltage source into equivalent current source.



13. Determine capacitance of a parallel plate capacitor of area 5 mm^2 separated by a distance of 4 μm in air.
14. A transformer having 2500 turns in the primary and 600 turns in the secondary side. What is the output voltage if 230V is applied to its input?
15. Define time constant of RC circuit during charging of capacitor.
16. Draw the circuit of a low pass filter and show its frequency response.
17. Distinguish between n-type and p-type semiconductor.
18. Write block diagram of a regulated power supply.
19. Mention any two uses of CRO.
20. Convert (a) 33_{10} into binary and (b) 111010_2 into octal number.

Part-C

Answer any Five of the following. **5X4=20**

21. Obtain an expression for effective resistance when two resistors connected in parallel.
22. State and explain maximum power transfer theorem.

23. Describe the construction of electrolytic capacitor and mention its any two applications.

24. Discuss the growth of current in a RL circuit.

25. Explain the classification of solid based on the band theory.

26. With circuit diagram & waveforms explain working of a bridge rectifier.

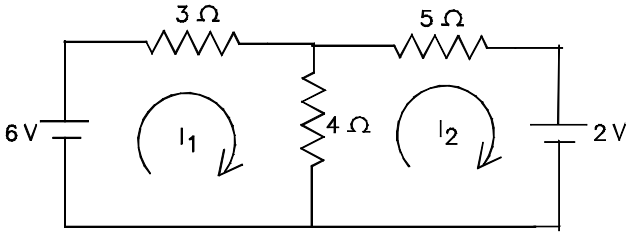
27. State and prove De Morgan's theorems.

28. Explain the working of 2 input diode AND gate.

Part-D (Problems)

Answer any <u>Four</u> of the following. **4X4=16**

29. Find currents I_1 and I_2 in the following network.



30. Complete the following table for the resistor R.

Sl.No.	I Band	II Band	III Band	IV Band	Value of R	Tolerance
1				Gold	560 Ω	
2					4.7 kΩ	± 5%
3	Red	Violet	Orange	No colour		
4					820 kΩ	± 10%

31. A series circuit with R = 100 Ω, L = 1 mH and C = 0.1 μF is connected to AC source. Calculate resonant frequency.

32. Determine R_L minimum for a zener diode voltage regulator of 5.6 V. Given supply voltage is 10V and R_S is 100 Ω Write the regulator circuit using above component values.

33. Simplify the Boolean expression $Y = ABC + \overline{A}BC + \overline{A}B\overline{C} + \overline{A}\,\overline{B}C + \overline{A}\,\overline{B}\,\overline{C}$

34. Perform $11110_2 - 10110_2$ using 2's complement method of subtraction.

Part-E

Answer any <u>Two</u> of the following. **2X6=12**

35. a) Describe the construction and working of a loud speaker (4)
    b) Write any two types of microphones (2)
36. a) Explain the construction & working of shunt capacitor filter (4)
    b) Write a note on bleeder resistor. (2)
37. Explain the construction and working of a Cathode ray tube. (6)

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