



PART-A

I. Answer all the questions:

1 × 10 = 10

1. Expand SCR.
2. Write the commercial unit of electrical energy.
3. Which type of capacitor is sensitive to polarity?
4. Does a transformer works with DC input?
5. Define the time constant of RL circuit.
6. What is barrier potential?
7. Draw the symbol of Shockley diode.
8. Mention the lightly doped region of a transistor.
9. What is a nibble?
10. Mention any one type of seven segment display.

PART – B

II. Answer any FIVE questions:

2 × 5 = 10

11. Give a brief note on scope of Electronics.
12. Mention any four properties of charges.
13. State Thevenin's Theorem.
14. Write short note on preset.
15. Define transient phenomenon.
16. Distinguish between intrinsic and extrinsic semiconductor.
17. The current gain of a transistor in CE mode is 200. Calculate the collector current when the base current is $20\mu\text{A}$?
18. Convert $AD5_{(16)}$ into binary and decimal number system.

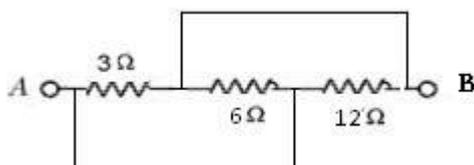
PART – C

III. Answer any FIVE questions:

3 × 5 = 15

19. Explain voltage divider rule.
20. a) Mention any four controls of an oscilloscope.
b) Write any two advantages of ultrasound scan.
21. Find the resistance between A and B.

(2+1)



22. Explain the construction of metal film resistor.
23. Draw the circuit of high pass filter. Draw its frequency response and write the expression for cutoff frequency.
24. With a neat diagram, briefly explain the formation of depletion region in the unbiased semiconductor diode.
25. With a neat circuit diagram, briefly explain the working of shunt capacitor filter.
26. a) Name the chemical used for etching process in PCB design

b) Mention any two advantages of PCB.

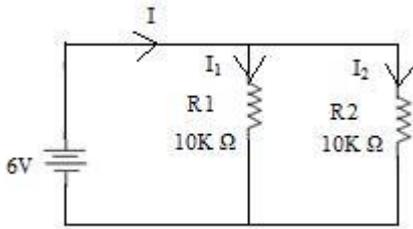
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PART – D

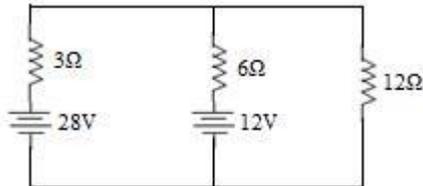
IV. Answer any THREE questions:

5 × 3 = 15

27. Find the total current flowing in the circuit and the branch current of the following circuit.



28. Using superposition Theorem, Find current through 12Ω resistor.



29. An inductor of 20mH is connected in series with a resistor of 50Ω. The combination is connected to 220V/50Hz source. Calculate (i) impedance of the circuit (ii) current in the circuit (iii) phase angle.

30. A 230V, 50Hz AC voltage is applied to the primary of 5:1 step down Transformer, which is used in bridge rectifier having a load resistance of 100Ω. Assuming the diodes to be an ideal, determine (i) DC output current (ii) DC output voltage (iii) DC power delivered to the load.

31. a) Simplify the following equation $ABC \square ABC \square ABC$ and draw logic circuit for the simplified expression using basic gates. b) 1) $110111_{(2)} \times 111_{(2)}$
2) $100011_{(2)}$ by $111_{(2)}$ (3+2)

PART – E

V. Answer any FOUR questions:

5 × 4 = 20

32. a) State Ohm's law and write its limitations.

b) Convert the current source of 5A with internal resistance 2Ω into voltage source. (3+2)

33. a) Derive an expression for the equivalent capacitance of two capacitors connected in series.

b) What do you mean by open and short circuit? (3+2)

34. Explain with a neat diagram, the construction and working of loudspeaker.

35. Classify solids based on energy band diagrams.

36. a) Explain the working of an NPN transistor.

b) Draw the circuit diagram of fixed +ve regulated power supply using IC7812. (3+2)

37. Explain with a neat circuit diagram, the working of DTL NAND gate. Write its truth table and timing diagram.
