BS

I P.U.C. ANNUAL EXAMINATION -2017

I

Time : 3.15 Hours | ELECTRONICS - 40 | Max. Marks : 70

Instructions:

i) Question paper contains four parts.
ii) Part - A has no choice.
iii) Part - D contains two sub parts : I) Problems II) Essay type questions
iv) Draw the circuit diagrams wherever necessary.

Part - A

Answer all of the following questions **10x1=10**

1. Name the most commonly used semiconductor material in the device fabrication.
2. State Ohm's law.
3. Write an expression for instantaneous value of AC voltage.
4. What is the value of SMD resistor with code 223?
5. Does a transformer works with DC input?
6. Name the majority charge carries in P-type semiconductor.
7. Draw the symbol of photodiode.
8. Mention the heavily doped region of a transistor.
9. Define 1's complement of a binary number.
10. Mention any one type of seven segment display.

Part - B

Answer any five of the following questions **5x2=10**

11. Write any two applications of cathode ray oscilloscope.
12. Discuss the merits of a multimeter.
13. Mention the factors on which capacitance of a capacitor depends.
14. Distinguish between microphone and speaker.
15. Define inductive reactance. Give the expression for inductive reactance.
16. Explain the second approximation of a semiconductor diode.
17. Calculate the emitter current I_E in a transistor for $\beta = 100$ and $I_B = 10\ \mu A$.
18. Write the truth table of two input AND - gate

Part - C

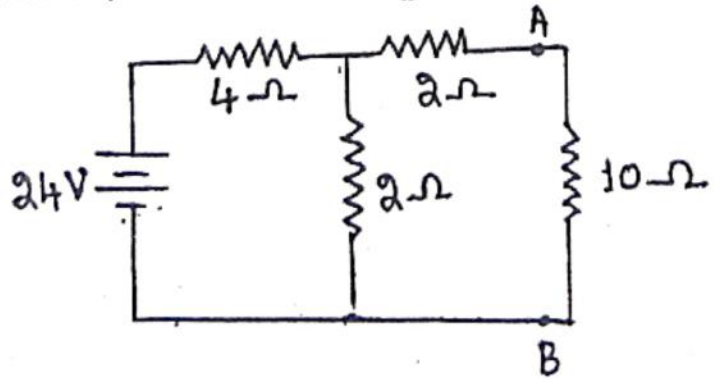
Answer any Five of the following questions **5x3=15**

19. Write a note on defence applications of electronics.
20. Explain voltage divider rule.
21. Convert the current source of 5A with internal resistance 2Ω into voltage source.
22. Write the constructional features of electrolytic capacitor.
23. Compare LED display with LCD display.
24. Draw the output characteristics of a transistor in CE - configuration. Show the different regions of operation.
25. Convert : (i) $(ADD)_{16}$ to decimal (ii) $(194)_{16}$ to binary.
26. What are the advantages of printed circuit board?

Part - D

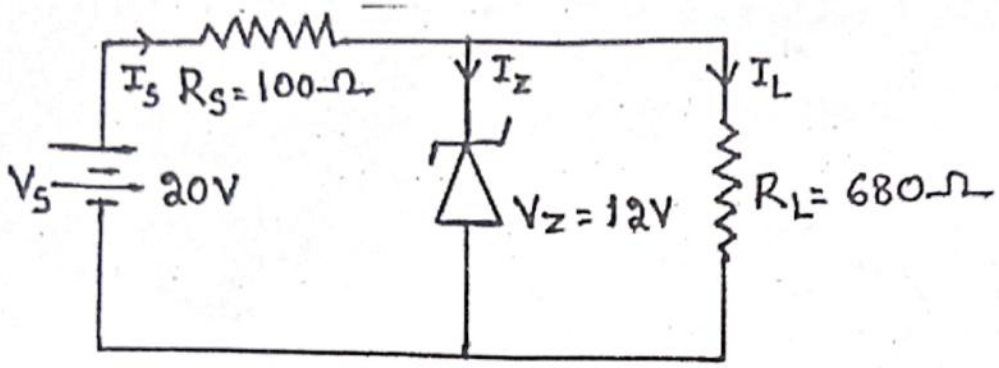
I Answer any Three of the following questions **3x5=15**

27. Using Thevenin's theorem, find the current through 10Ω resistance in the following circuit.



(P.T.O.)

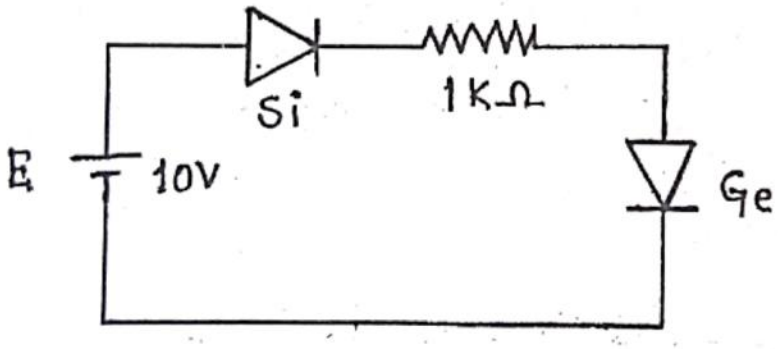
28. A transformer has 500 turns in the primary and 250 turns in the secondary. What is the turn's ratio? How much is the secondary voltage with a primary voltage of 220V?
29. An inductor of 20mH is connected in series with a resistor of 50Ω. The combination is connected to 220V/ 50HZ source. Calculate
    i) Impedance of the circuit ii) Current in the circuit iii) Phase angle.
30. For the Zener diode voltage regulator, find (i) load voltage (ii) Voltage across the series resistance Rs. (iii) The current through the zener diode.



31. Subtract $(27)_{10}$ from $(35)_{10}$ using 2's complement method.

II Answer any four of the following questions. **4x5=20**

32. Derive an expression for the equivalent resistance of two resistors connected in parallel.
33. a) Explain the construction and working of a thermistor.
    b) Write any two applications of LDR. 3+2
34. Discuss the growth and decay of current in RL - circuit.
35. Explain the construction and working of a centre - tapped full wave rectifier. Show its input and output wave forms.
36. a) Draw the circuit diagram of fixed positive regulated power supply using IC-7812.
    b) Determine the current through 1KΩ resistor in the following circuit. 3+2



37. a) State De-Morgans' theorems. 2+3
    b) Simplify the Boolean equation.

$$Y = \left(\overline{\overline{AB} \cdot A}\right) \cdot \left(\overline{\overline{AB} \cdot B}\right)$$