

Bachelor of Science (B.Sc.) Semester—I Examination

ELECTRONICS

(Electronic Components, Network Theorems)

Optional Paper—1

Time : Three Hours]

[Maximum Marks : 50

- N.B. :**— (1) All questions are compulsory and carry equal marks.
 (2) Draw diagrams wherever necessary.

EITHER

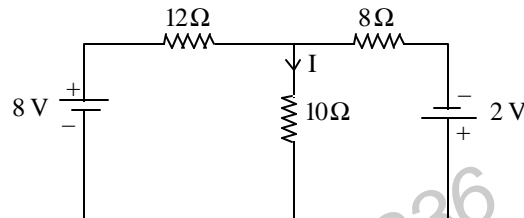
1. (A) What is a Transformer ? Draw the symbol of transformer. Explain different types of transformers. Write the applications of transformer. 2+6+2

OR

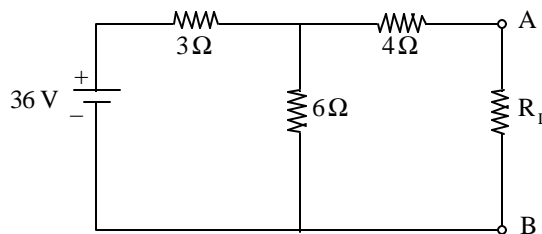
- (B) Draw the block diagram of CRO and explain the function of each block. 10

EITHER

2. (A) State and explain KVL and KCL. Using Thevenin's theorem, calculate the magnitude and direction of current flow through $10\ \Omega$ resistance in the given circuit :

3+7**OR**

- (B) State and explain Maximum power transfer theorem. Find the value of load resistance R_L for maximum power transfer in given circuit. Also find the value of this maximum power.

5+5**EITHER**

3. (A) Explain the operation of PN junction diode in forward bias and reverse bias condition. Define the following terms of PN junction diode.
- (i) Cut-in voltage
 - (ii) Breakdown voltage
 - (iii) Static forward resistance
 - (iv) Dynamic forward resistance. 6+4

OR

- (B) What is Zener diode ? Explain Avalanche and Zener effects. Explain construction and working of LED. 5+5

EITHER

4. (A) What is BJT ? Name two types of BJT. Draw their symbols. Explain the function of each region of BJT. Explain the working of PNP transistor. 6+4

OR

- (B) What is load line ? Explain the construction of the load line in CE amplifier. Define operating point of a transistor. A transistor amplifier uses 12 V DC supply and load resistance is of 6Ω . Draw the DC load line. 6+4

5. Solve any TEN :

(A) What is resistor ?

(B) State any two uses of resistor.

(C) What is Capacitor ?

(D) What is the value of internal resistance of an ideal current source ?

(E) Draw the circuit diagram of potential divider circuit.

(F) State super-position theorem.

(G) Write any two applications of PN junction diode.

(H) Draw V-I characteristics of PN junction diode.

(I) Draw symbol of PN junction diode and LED.

(J) If $\alpha = 0.98$, find β .

(K) What is biasing ?

(L) State any two applications of transistor.

1×10=10