KNT/KW/16/5059

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

ELECTRONICS

Compulsory Paper—1

(Electronic Components, Network Theorems)

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) Draw the block diagram of CRO and explain in brief the role of each. 10

OR

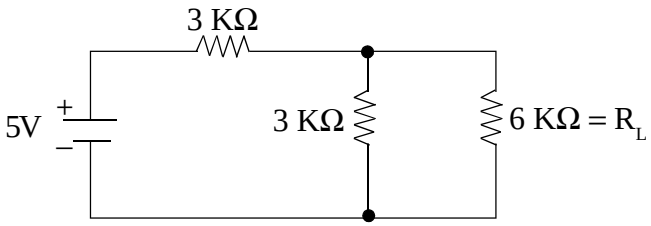
(B) Explain the resultant values of series and parallel combination of capacitors. Explain 4 band colour coding scheme used in carbon resistors with example. 3+7

EITHER

2. (A) State Thevenin's Theorem and explain in detail the procedure to thevenize the circuit. State Kirchoff's laws. 7+3

OR

(B) State maximum power transfer theorem and explain. State its area of applications. Find the current flowing through R_L = 6 KΩ in following circuit using Norton's theorem.



5+5

EITHER

3. (A) Explain the V-I characteristics of PN junction diode. Explain Avalanche effect and Zener effect. 6+4

OR

(B) Explain Intrinsic and Extrinsic semiconductor. Explain depletion layer and potential barrier. 6+4

EITHER

4. (A) Explain the working of N-P-N type of transistor. What are the different modes of BJT ? Explain. 6+4

OR

(B) Define α and β. Find the relationship between α and β. Find the value of α, β and I_C if I_E = 10 mA and I_B = 1 mA. 6+4

5. Attempt any **TEN** :—

(A) What is the unit of capacitance ? 1

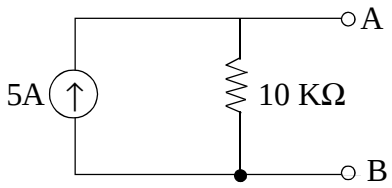
(B) What is the colour code of 4.7 KΩ ± 10% resistor ? 1

(C) Draw the symbolic representation of step up transformer. 1

(D) What is the value of internal resistance of an ideal voltage source ? 1

(E) State superposition theorem. 1

(F) Draw equivalent voltage source for : 1



(G) What are donor atoms ? 1

(H) Draw symbolic representation of Zener diode. 1

(I) What is the valency of Germanium ? 1

(J) Define cut-off region. 1

(K) What is 2-point in a transistor circuit ? 1

(L) What is the need of biasing ? 1