NKT/KS/17/5059

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

ELECTRONICS

(Electronic Components, Network Theorems)

Compulsory Paper—1

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw neat and well labelled diagram wherever necessary.

EITHER

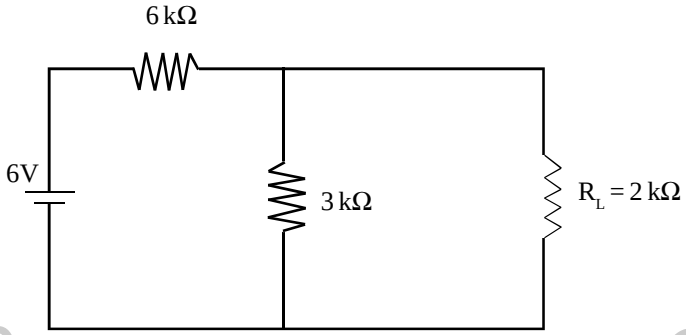
1. (A) Explain 4 band colour coding methods used in carbon resistor. Find the value of resistance with colour code sequence Brown, Black, Orange, Gold. Find the colour code sequence for 47K ± 10% resistance. 6+2+2

OR

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

EITHER

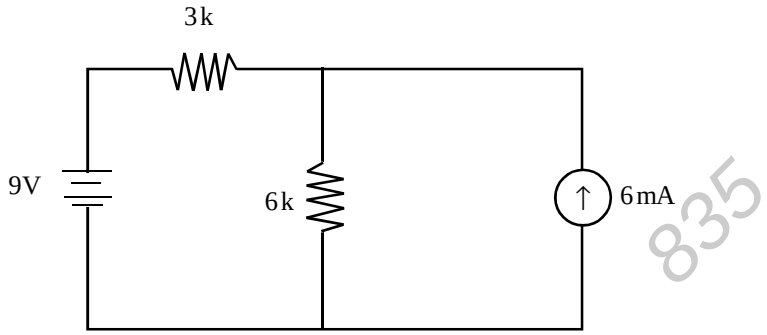
2. (A) State Norton's theorem and explain the method of calculating I_N and R_N for a Norton equivalent circuit with suitable example. Calculate the current thought R_L = 2KΩ resistor using Thevinin theorem given below :



5+5

OR

(B) State and explain Kirchhoff's current and voltage law. Using superposition theorem calculate the current flowing through 6KΩ resistor in the circuit : 5+5



EITHER

3. (A) What are intrinsic and extrinsic semiconductors ? Explain formation of P-type and N-type semiconductor. Draw and explain energy band diagram for each. 3+3+4

OR

(B) Explain avalanche effect and zener effect. What is LED ? Explain how charge carrier recombination produces light. Which segments need to be activated to display the number '3' in seven segment display ? 5+3+2

EITHER

4. (A) What is Transistor ? Explain construction of NPN transistor and describe in detail the transistor action. Draw the circuit diagram and explain input and output characteristics of transistor in CE mode. 5+5

OR

(B) Explain using neat circuit diagram the operation of a transistor as a switch. Explain the voltage divider method for biasing of transistor. State their advantages and disadvantages. 5+5

5. Solve any **ten** :

(a) What is reactance of capacitor C ?

(b) State applications of Relay.

(c) Define Switch.

(d) State Ohm's law.

(e) State Superposition theorem.

(f) State KVL.

(g) What is Cut–in voltage of Germanium diode ?

(h) What is conduction band ?

(i) Draw the symbol of zener diode.

(j) Draw the symbol of npn transistor.

(k) What is biasing in transistor ?

(l) What is operating point in o/p characteristics of transistor ? 1×10