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

ELECTRONICS : Basic Circuit Components and Network Analysis

Paper – 1

Time : Three Hours] [Maximum Marks : 50

Note :— (1) All questions are compulsory and carry equal marks.

(2) Draw labelled diagrams wherever necessary.

EITHER

1. (a) What are passive components ? What are resistors ? What are the different types of resistors ? 6

(b) Explain the colour coding schemes for carbon composition resistors. 4

OR

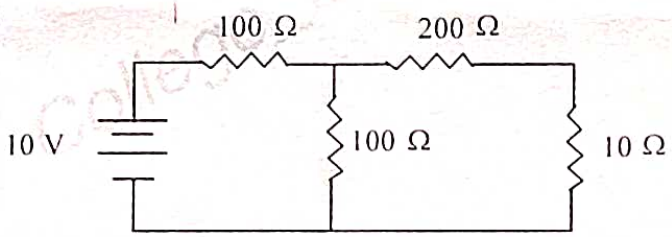
(c) What is self-inductance & mutual inductance ? 4

(d) Explain different types of inductors according to the type of core used. 6

EITHER

2. (a) Explain Kirchoff's current and voltage laws with its sign conventions. 4

(b) Calculate the current flowing through 10 Ω resistor. 6



OR

(c) State Thevenin's theorem. Explain the steps to Thevenize a dc circuit with suitable example. 6

(d) Explain the concept of ideal and practical voltage source. 4

EITHER

3. (a) Draw a RC circuit with DC excitation and explain its transient analysis. 4

(b) Explain the transient analysis of RLC circuit with DC source. 6

OR

(c) Explain the following terms related to an ac signal : 6

(i) Amplitude

(ii) Period

(iii) Peak to peak amplitude.

(d) Explain a series resonant circuit with a suitable diagram. 4

EITHER

4. (a) What is a transducer ? How it is different from actuator ? List down any four characteristics of a transducer. 4

   (b) What are passive transducers ? Explain construction and working of a potentiometer as a transducer. 6

OR

   (c) Explain construction, working and applications of LVDT transducer. 6

   (d) What are the different types of thermistors ? Explain in brief. 4

5. Attempt any **ten** : 10

   (a) Draw a symbol of SPDT relay.

   (b) Write down the colour code for $1.8k\Omega \pm 5\%$.

   (c) What are the different types of switches ?

   (d) What is a SMT ?

   (e) State maximum power transfer theorem.

   (f) Write down the principle of duality.

   (g) What is a mesh ?

   (h) What is meant by RMS value ?

   (i) What is the phase angle covered by a one wave ?

   (j) What is meant by bandwidth ?

   (k) State the unit of Bandwidth.

   (l) What are the applications of Piezoelectric transducers ?

096 - 01
133 - 11
166 - 05
167 - 01
252 - 12
265 - 11
283 - 01
297 - 05
301 - 11
323 - 04
333 - 00
349 - 01