PRS/KS/24/20032

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

ELECTRONICS : Basic Circuit Components and Network Analysis

Paper – I

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

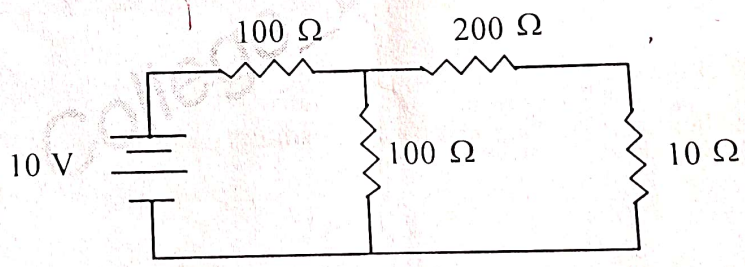
(c) What is self-inductance & mutual inductance ? 4

(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.

EITHER

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

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

OR

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

(i) Amplitude

(ii) Period

(iii) Peak to peak amplitude.

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

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 ?