Roll No. ..... Total Pages : 4

BT-2/M-22 **42041**

BASIC ELECTRICAL ENGINEERING

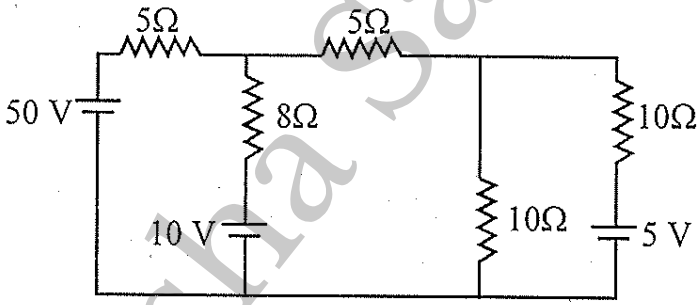
Paper–ES-101A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit.

UNIT–I

1. (a) A 50W resistance is connected across a 10 V battery. What is the current through the resistor? Find the energy consumed in 8 s. 2½

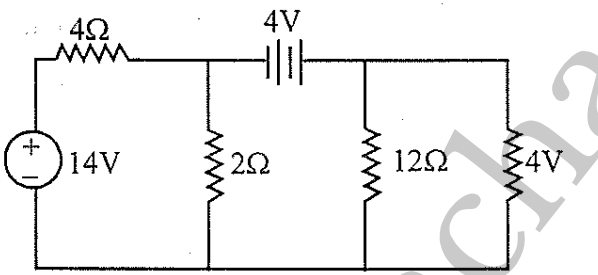


(b) The resistance of two wires is 25 W when connected in series and 6 W when joined in parallel. Calculate the resistance of each wire. 2½

(c) For the circuit shown in figure, find out the current in each branch by Nodal Voltage Analysis. 10

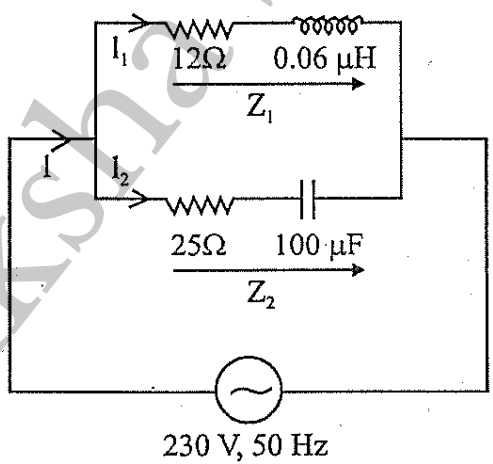
2. (a) Define maximum power transfer theorem. Describe the condition for maximum power transfer with the help of circuit diagram. 5

(b) Find out the voltage drop across 12 Ω resistance using Norton's theorem for the circuit shown in Figure. 10



UNIT–II

3. (a) Find out the current through each branch shown in figure. 8



(b) What do you mean by average and RMS value? Describe and find out the expression related to them. 7

4. (a) Draw and explain variation of R, L, C, I and power factor with variation of frequency in series RLC circuit. 5

(b) Derive the expression for resonance frequency in series RLC circuit. 10

UNIT–III

5. (a) A 3-phase, 3-wire supply feeds a load which consists of three equal resistance having value R ohms. If one of the resistance is removed, then how much percentage load is reduced when the load is (a) star connected and (b) delta connected. 5

(b) With the aid of phasor diagram show that three phase power and power factor can be measured by using two watt meters. 10

6. (a) Explain the working of single phase transformer in brief. 5

(b) What do you mean by open circuit and short circuit test? Describe the various steps to conduct these tests on single phase transformer and outcomes of them. 10

UNIT–IV

7. (a) What do you mean by DC machine? Explain the role of commutator in DC machine. 5

(b) What are the different methods for speed control of DC motor? Write short note. 5

(c) Describe the explain the synchronous machine in brief. 5

8. Write short notes on the following : 15

(a) Single phase induction machine.

(b) Different type of fuses used in electrical installations.

(c) Various types of wire and cables.