[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2123)

1319

B. Tech 1st Semester Examination

Basic Electrical Engg. (O.S.)

EE-1001

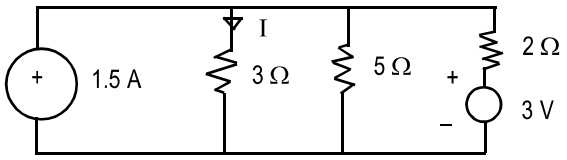
Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Total 5 questions to be attempted. Section E is compulsory. 4 questions to be attempted from section A, B, C & D. Selecting at least one from each.

SECTION - A

1. State and explain Kinchoff's laws for an electric ckt.
   Using superposition theorem, determine current I in the network shown in the fig. **(20)**



2. Explain what is meant by terms-waveform, frequency and average value.
   A coil has a time constt. of 1 sec and inductance of 10H. Calculate the value of current 0.1 sec. after switching on to a d.c. supply of 100V. **(20)**

SECTION - B

3. Explain the meaning of following terms—inductance, capacitance, impedance for an a.c. ckt.

A coil of resistance 15Ω and reactance 25Ω is connected in parallel with a capacitor of reactance 10Ω and series resistance of 12Ω to a 100V, 50 Hz supply. Calculate the supply current and the circuit phase angle. **(20)**

4. Explain with the help of a phasor diagram, the phenomenon of resonance in a ckt containing an inductor, a capacitor and a resistor in series.

   A delta connected load draws a current of 15A at a lagging power factor of 0.85 from a 400V, 3 phase, 50Hz supply. Find the resistance and inductance of each phase. **(20)**

SECTION - C

5. Describe the operation of a single phase transformer explaining clearly the functions of different parts. Why are the cases laminated? Derive the expression of induced e.m.f. in a transformer. **(20)**

6. Draw the phasor diagram for a 3 ϕ induction machine.

   An 8 pole lap wound d.c. generator armature has 960 conductors, a flux of 40 mWb and a speed of 400 rpm. Calculate the e.m.f. generated on open ckt. **(20)**

SECTION - D

7. Describe with the aid of a diagram, the construction of a repulsion type moving iron instrument with particular reference to the means used for deflection, control and damping. **(20)**

8. Describe the construction and working principle of a single phase energy meter in detail. **(20)**

SECTION - E

9. (i) Define sensitivity of an instrument. How a moving coil ammeter can be used to measure current higher than its rating?

   (ii) Why induction machine is known as an asynchronous machine? Explain.

   (iii) State the advantages of a 3 phase system over a single phase system.

   (iv) Define the terms—R.M.S. value, average value, form factor, peak factor for an alternating quantity. **(4×5=20)**