[Total No. of Questions - 9] [Total No. of Pr)d Pages - 4]
(2066)

16005(J) J-16

B. Tech 2nd Semester Examination

Principles of Electrical Engineering (CBS)

EE-101

Time : 3 Hours **Max. Marks : 60**

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 : Attempt five questions in all, selecting one question each from section A, B, C & D. Section-E is compulsory.

SECTION - A

1. (a) State Maximum power transfer theorem and also prove the condition when maximum power is transferred in a circuit. (8)

   (b) Determine the current supplied by each battery in the circuit shown in Fig. 1 by using mesh analysis. (4)

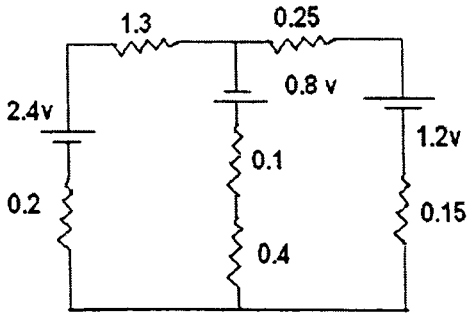

Fig. 1

[P.T.O.]

2. (a) What is RMS value? Derive an expression for the RMS value of current of full wave rectifier. (6)

   (b) Obtain the equivalent resistance at the terminals A-B for circuit in Fig 2. (6)

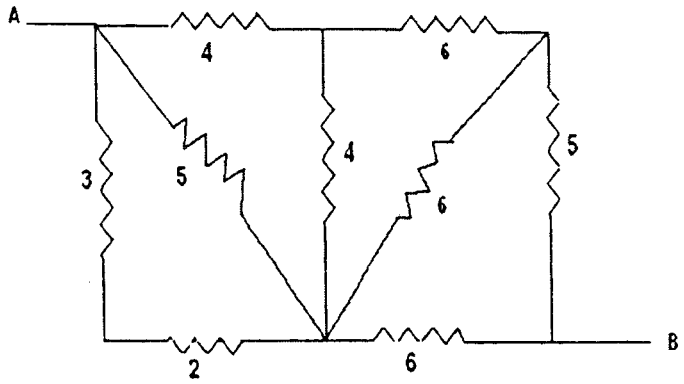

Fig. 2

SECTION - B

3. (a) Explain the resonance in series R L C series circuit. (8)

   (b) A 3 phase 400V , 50 Hz , ac supply is fed in a 3 phase delta connected load with each phase having R= 25ohms, inductance of 0.15H and C=120μF in series. Determine the line current , volt amperes, active power and reactive volt amperes (4)

4. Draw and explain in detail the general structure of electrical power systems. (12)

SECTION - C

5. (a) Draw the equivalent circuit of transformer, also explain the losses in the transformer. (6)

(b) Give the working principle and constructional details of single phase induction motor. (6)

6. (a) Draw and explain in detail the characteristics of:

(1) A shunt of separately excited DC motor.

(2) Series DC motor. (9)

(b) The armature resistance of a 200 V shunt motor is 0.4ohms and no load current is 2A. When loaded and taking an armature current of 50A, the speed is 1200 r.p.m. Find approximate no load speed. (3)

SECTION - D

7. (a) Draw the constructional features and explain in detail the working of a energy meter. (8)

(b) Write short notes on domestic wiring. (4)

8. Explain in detail the working and construction of PMMC instruments. Give the advantages. Also derive the torque equation for the same. (12)

SECTION - E

9. (a) Differentiate between unilateral and bilateral network. (2)

(b) Write the electrical analogous of reluctance. (2)

(c) Define bandwidth of a resonant RLC circuit. (1)

(d) Name different methods to reduce losses of transformers. (1)

[P.T.O.]

(e) What is quality factor? (1)

(f) Write the emf equation of transformer. (1)

(g) Differentiate between mesh and a loop in an electric circuit. (1)

(h) Give the importance of shunts and multipliers in measuring instruments. (1)

(i) Give the units of following:

(1) Active power (2) Apparent power (3) Impedance (4) Bandwidth. (1)

(j) Give the relation between resistances connected for delta to star conversion. (1)