EE-101/1846
B. Tech. (Semester-I) Exam.- 2012
Electrical Engg.

Time: Three Hours
Maximum Marks: **100**

Solving.

Note: Attempt question from all the sections.

Section –A
(Short Answer Type Questions)

Note: Attempt any ten questions. Each question carries four marks.   (4x10=40)

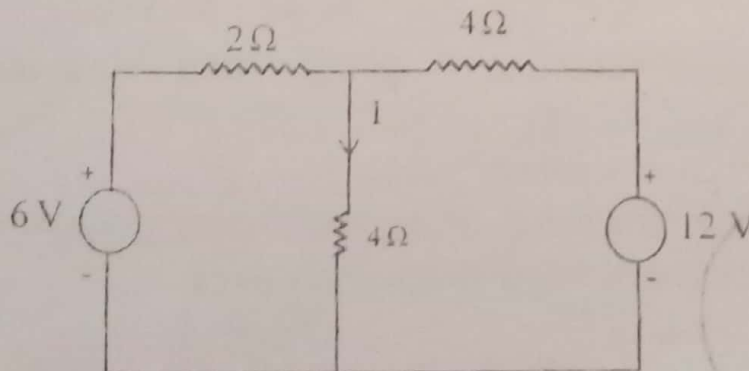1. State and explain Kirchoff's laws with suitable examples.

2. State and explain super position theorem. Mention its limitations.

3. Find the current I using Thevenin's theorem in the network shown.

4. Explain the loop current method of solving a network.

5. Derive an expression for average and rms value of a simsoidally varying a c voltage.

6. Differentiate between form factor and peak factor.

7. Explain the difference between apparent power, real power and reactive power.

8. State the advantages of three phase system over single phase system.

9. Differentiate between recording and integrating type of instruments.

10. Explain magnetic and electric circuits. Give analogy between them.

11. State and explain Faraday's law of electromagnetic induction.

12. Explain the concept of mutual induction. Define coefficient of Coupling.

13. Explain the basic principle of operation of a single phase transformer.

14. What is all-day efficiency of a transformer? How does it differ from ordinary efficiency?

15. Derive emf equation of a d.c. generator.

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Section –B

(Long Answer Type Questions)

Note: Attempt any three questions. Each question carries twenty marks.   (20x3=60)

1.   (a)   State and prove Thevenin's theorem.

      (b)   Using super position theorem find the Current I in the network shown.
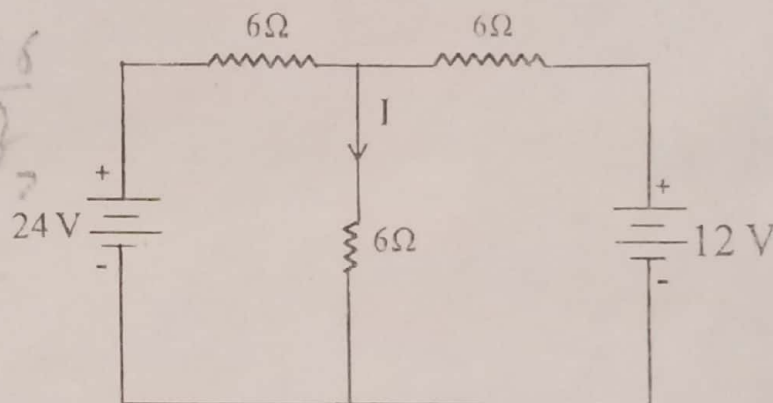
2.   The equation of an alternating current $i = 42.42\ sin628t$. Determine-

    (i)   Its maximum value   (ii)   Frequency

    (iii)   rms value   (iv)   Average value

    (v)   Form factor

3.   Explain the principle, construction and working of a PMMC type instrument. What will it give as an output if a half wave rectified a c having peak value of 100 is given as input?

4. (a) What is an auto-transformer? How does it differ from conventional two winding transformer? State its application.

(b) An auto-transformer is used to step down voltage level from 230 V to 200 V while the load is 20 KW at up f. Neglecting losses and magnetizing current. Find the current in different sections of the Winding.

5. Explain the principle of operation and construction of a three phase induction motor. Hence, derive an expression for the frequency of rotor current in it.

6. (a) A coil of 300 turns, wound on a core of non-magnetic material, has an inductance of 10 m h. Calculate (i) the flux produced by a current of 5 A and (ii) the average value of emg induced when a current of 5 A is reversed in 8 milliseconds.

(b) Explain the working principle of synchronous motor. Draw V-Curves and give its applications.

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