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EE–1846

B. Tech. (First Semester)

EXAMINATION, 2020

ELECTRICAL ENGINEERING

Time : Three Hours

Maximum Marks : 100

Note : Attempt questions from both Sections as directed.

Section—A

(Short Answer Type Questions)

Note : Attempt any *ten* questions. Each question carries 4 marks. 10×4=40

1. Explain Active and Passive elements.
2. Discuss different types of voltage and current sources.

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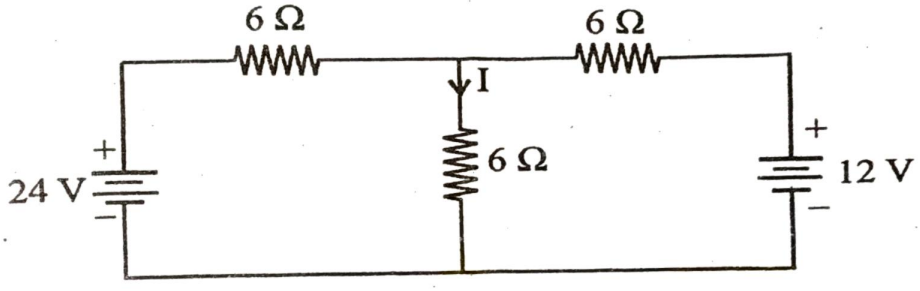
3. State and explain Kirchhoff's laws.
4. Define term : MMF, flux and reluctance.
5. Describe the analogies between electric and magnetic circuits.
6. State and explain Faraday's law of electromagnetic induction.
7. What is meant by leakage and fringing ?
8. Define the following :
   (i) Q factor
   (ii) Power factor
   (iii) Active and Reactive Power
9. Draw the phasor diagrams for pure inductive and pure capacitive circuits.
10. What is a 3-phase system ? Give its necessity and advantages.
11. What is a function of Transformer ?
12. What do you understand by step-up and step-down transformer ?
13. State and explain super-position theorem.
14. State Thevenin's theorem.
15. State and prove maximum power transfer theorem.

Section—B

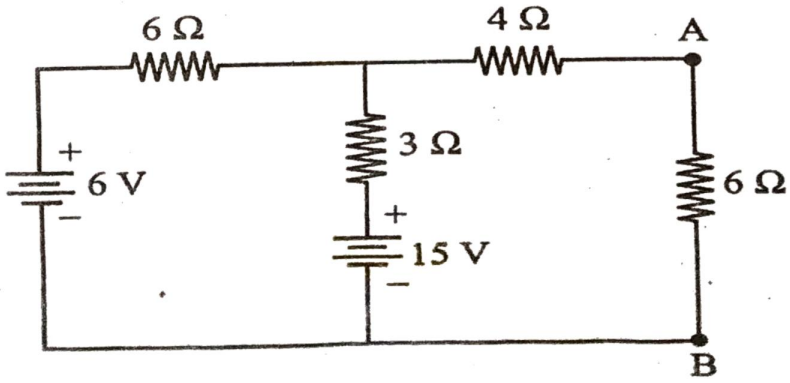
(Long Answer Type Questions)

Note : Attempt any *three* questions. Each question carries 20 marks. 3×20=60

1. Using superposition theorem find the current I in the given network :



2. Determine current through 6 Ω resistance connected across AB terminals in the circuit shown, using Thevenin's theorem :



3. Explain the principle of operation and construction of a Transformer.
4. Explain the working of a Moving Iron Type Instrument.
5. Explain construction and working principle of DC motor.
6. Explain and derive the expression for (R-L-C) series circuit.