EE-1860

B.Tech. (Semester-II) Exam.–2016

Electrical Engineering

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

Note : Attempt questions from all sections.

SECTION - A

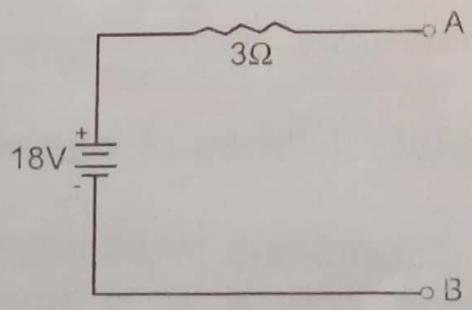
(Short-answer Type Questions)

Note : Attempt **any ten** questions. Each question carries 4 marks. 10x4=40

1. Explain Active and passive elements?

2. Convert the following voltage source into current source across AB.

(i)



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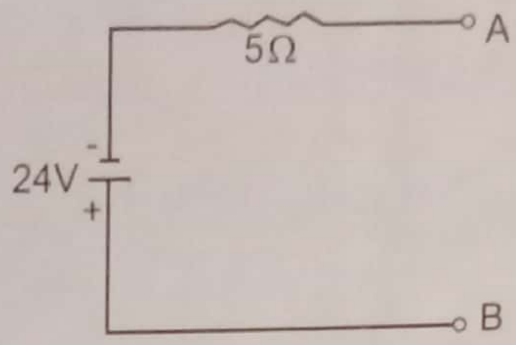
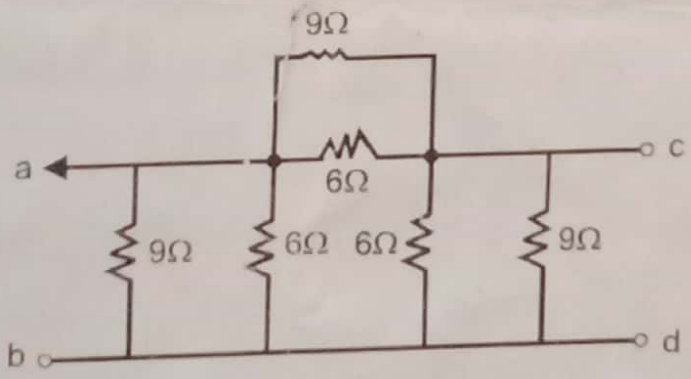
(ii)



3. Explain superposition theorem? 3

4. Find the equivalent star network for the network shown in figure.



5. Explain the following terms.

(i) Peak value

(ii) Average value

6. A constant voltage source at a frequency of 1MHz is applied to an inductor in series with a

variable capacitor. When the capacitor is set to 500pF, the current has its maximum value, while it reduced to one half, when capacitor is 600 pF. Find the quality factor of inductor.

7. Explain the following

(i) Form factor

(ii) Peak factor

8. Write the advantage of three phase system over single phase system.

9. Explain losses in transformer?

10. Two coils of self inductances 120 mH and 250 mH and mutual inductances of 100mH are connected in parallel. Determine the equivalent inductances of combination if

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(i) Mutual flux help the individual fluxes.

(ii) Mutual flux opposses the individual fluxes.

11. What is eddy current loss?

12. Write the applications of D.C. motors.

13. What are the advantages and disadvantages of PMMC?

14. A 3-Phase induction motor is wound for 4 poles and is supply from a 50 Hz system. Calculate

(i) Synchronous speed

(ii) Actual speed while running at 4% slip.

(iii) Frequency of e.m.f. induced in rotor.

15. A resistance of 15Ω and a capacitor of 150 μF capacitance are connected in series across a 230V, 50 Hz supply. Calculate

(i) Impedance of circuit

(ii) Current

(iii) power factor and phase angle.

SECTION - B

(Long Answer type questions)

Note : Attempt **any three** questions. Each question carries 20 marks. 3x20=60

1. What is transformer? Explain the construction and working principle of transformer? What happens when transformer works on d.c. supply?

2. Explain the construction and working of single phase induction motor?

3. (i) Explain the parallel resonance circuit?

(ii) A coil of 15Ω resistance and 0.3H inductance is connected in parallel with a variable capacitor across a 230V, 50Hz supply. Calculate

(a) The capacitance of a capacitor for resonance.

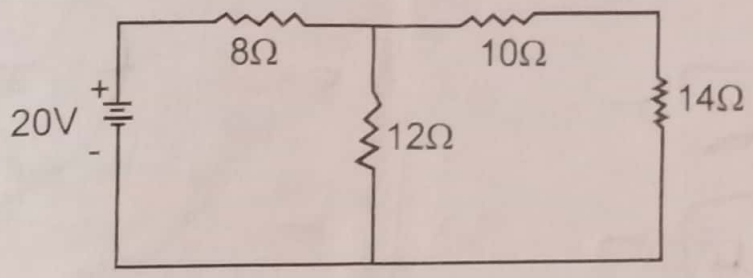
(b) The effective impedance of circuit.

(c) The current supplied from the mains.

4. Explain the principle, construction and working of permanent magnet moving coil instruments? Also write its advantage and disadvantage.

5. (i) Explain Norton's theorem with suitable example.

(ii) Using Norton's theorem determine the current in 12Ω resistor in the network shown in figure.



6. Explain principle, construction and working of D.C. motors?

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