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II/IV B.Tech (Supplementary) DEGREE EXAMINATION

November, 2016

Fourth Semester

Time: Three Hours

Common for CSE & IT

Electrical Technology

Maximum : 60 Marks

Answer Question No.1 compulsorily.

(1X12 = 12 Marks)

Answer ONE question from each unit.

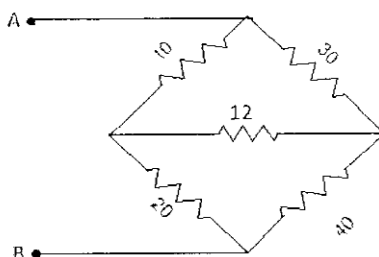
(4X12=48 Marks)

(1X12=12 Marks)

- 1 Answer all questions
 - a) State Kirchhoff's laws.
 - b) Define average and RMS value.
 - c) Give the relation between line and phase voltages, line and phase currents in a delta connected balanced system.
 - d) State Thevenin's theorem.
 - e) What is two port network?
 - f) Write the relation between Z and Y parameters of a two port network.
 - g) What is the function of commutator in DC generator?
 - h) Draw the torque versus armature current characteristics of a DC motor.
 - i) What is the condition for maximum efficiency of a transformer?
 - j) Define slip.
 - k) A 415V, 6 pole induction motor is energized at 50Hz frequency. What is the speed of the rotating magnetic field?
 - l) Write different types of starting methods for single phase induction motor.

UNIT I

- 2 a) Determine the equivalent resistance across terminals A and B



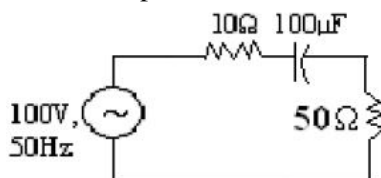
6M

- b) Define the following i) RMS value, ii) Average value and iii) Form factor of an alternating quantity.

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(OR)

- 3 a) For the circuit shown, determine the total impedance, total current and phase angle.



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- b) Explain the relationship between line and phase quantities in a star and delta connected three phase systems.

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UNIT II

- 4 a) Derive the star-delta transformation for a resistive network.
- b) State and explain Maximum power transfer theorem. Obtain an expression for condition for maximum efficiency

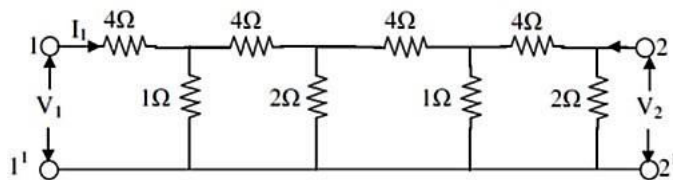
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(OR)

- 5 a) Determine the Y parameters of the network shown in fig.

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- b) Express y-parameters in terms of z -parameters and h -parameters

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UNIT III

- 6 a) Briefly explain the principle and operation of dc generator 6M
 b) With a neat sketch explain the operation of three point starter. Also mention the applications of it. 6M

(OR)

- 7 a) Describe briefly the various losses in a transformer and explain how each loss varies with the current? 6M
 b) A 40 kVA, 2200/200V transformers has iron loss of 450 and a full load copper loss of 800W. Determine the percentage efficiency of the transformer at 0.8 p.f at half full load. 6M

UNIT IV

- 8 a) Explain the slip-torque characteristics of three phase induction motor. 6M
 b) Explain the principle of operation of a single phase induction motor. 6M

(OR)

- 9 a) Obtain an expression for E.M.F of a synchronous generator. 6M
 b) Mention the applications of synchronous motors. 6M