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Paper Id:

120202

Sub Code: EEE 201

Roll No:

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B TECH
(SEM II) THEORY EXAMINATION 2017-18
ELECTRICAL ENGINEERING

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

- a) What are the limitations of superposition theorem?
- b) Explain active and passive elements with examples.
- c) What do you mean by average value and RMS value?
- d) What is the Q factor of a series A.C. circuit?
- e) What do you mean by deflecting torque and controlling torque?
- f) What are the advantages of three phase supply over single phase supply?
- g) What do you mean by reluctance and flux in a magnetic circuit?
- h) What happens when dc supply is given to the transformer?
- i) Give the physical significance of back EMF in dc motor.
- j) What do you mean by slip in an induction motor, explain?

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

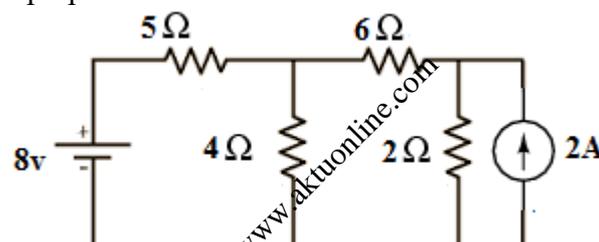
- a) Explain Maximum power transfer theorem and determine the condition of maximum power transfer.
- b) Prove that for a series resonance circuit $F_r = \sqrt{F_1 F_2}$ where F_1 and F_2 are the cut off frequencies.
- c) With the help of neat and clean diagram explain construction and working principle of MI instruments also give the advantage and disadvantages of the instrument.
- d) Explain working principle of the single phase transformer and derive the E.M.F. equation for it.
- e) Draw and discuss the characteristic of Different types of D.C. motor and also give their applications.

SECTION C

3. Attempt any one part of the following:

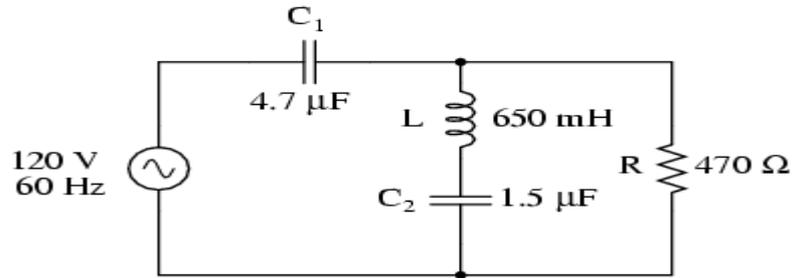
10 x 1 = 10

- (a) Derive the relations for star/ delta conversion in dc network.
- (b) Explain superposition theorem and find current in each branch using this theorem.



4. Attempt any one part of the following:**10 x 1 = 10**

- (a) For the circuit shown in figure find Current in each branch, total impedance and power loss in the circuit.



- (b) Explain resonance in a series RLC circuit. Also derive for resonance frequency, resonance curve and quality factor.

5. Attempt any one part of the following:**10 x 1 = 10**

- (a) Derive and explain two wattmeter method for the measurement of power factor with phasor diagram.
- (b) Derive the relation between line and phase values in three phase star connection. Three similar coils each of resistance 20 ohm and inductance 0.08 H are connected in delta to a 3 phase 440 V 50 cycle supply. Calculate (a) phase current (b) Line current (c) power factor of the circuit (d) power absorbed.

6. Attempt any one part of the following:**10 x 1 = 10**

- (a) Give the similarities and dissimilarities between electrical circuit and magnetic circuit. Also explain the working principle of transformer.
- (b) Give the layout of a Power system using single line diagram and also explain its voltage levels.

7. Attempt any one part of the following:**10 x 1 = 10**

- (a) Give the construction and working of a three phase synchronous motor.
- (b) Explain single phase shaded pole induction motor & Explain Torque-slip characteristics. A 3 phase, 4 pole induction motor is supplied from three phase, 50 Hz ac supply. Determine:
- Synchronous speed
 - Rotor speed when slip is 4%
 - Rotor frequency when rotor runs at 600 rpm.