Printed Pages: 02   **Sub Code: EEE-201**

Paper Id: | 120219 | **Roll No.** | | | | | | | | | |

B TECH
(SEM II) THEORY EXAMINATION 2018-19
ELECTRICAL ENGINEERING

Time: 3 Hours   **Total Marks: 100**

Note: 1. Attempt all Sections. If you require any missing data, choose suitably.

SECTION A

1. **Attempt all questions in brief.**   **2 x10 = 20**
   a) What are the applications of maximum power transfer theorem?
   b) Explain linear and nonlinear elements with examples.
   c) Determine the RMS value of sinusoidal current?
   d) What is the value of current at resonance frequency?
   e) What do you mean by restraining torques in instruments?
   f) What are the advantages of three phase supply over single phase supply?
   g) Compare electric circuit and magnetic circuit.
   h) What are the problems associated with auto transformer?
   i) Why we use capacitor in single phase induction motor?
   j) What do you mean by synchronous speed?

SECTION B

2. **Attempt any three of the following:**   **10 x 3 = 30**
   a) For the given circuit find current in 6 ohm resistance using Norton's theorem.
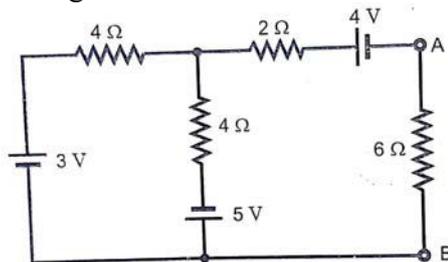

   b) Derive the relation for resonance frequency and quality factor in a RLC series circuit.
   c) With the help of neat and clean diagram explain construction and working principle of PMMC instruments also give the advantage and disadvantages of the instrument.
   d) Draw and explain the equivalent circuits for the single phase transformer in detail.
   e) Explain the working of three phase induction motor and draw torque slip characteristic.

SECTION C

3. **Attempt any one part of the following:**   **10 x 1 = 10**
   (a) Derive the relation for the conversion of delta circuit into star in a dc network.

   (b) Explain superposition theorem and find current in branch AB using this theorem.
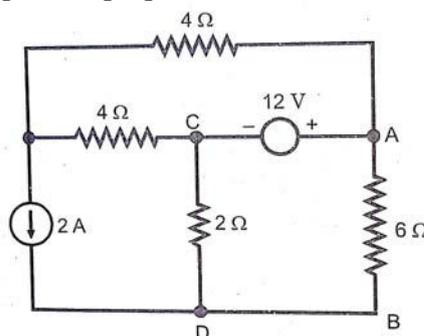
4. **Attempt any one part of the following:** 10 x 1 = 10

(a) A 160 V, 80W lamp is operated on 210V 50 Hz supply. In order that lamp should operate on correct voltage, Calculate value of (i) non inductive resistance (ii) pure inductance (iii) Pure Capacitance to be connected in series with the lamp.

(b) Derive the relation for instantaneous power and average power for a series RL AC circuit also draw the phasor diagram and wave diagrams for them.

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

(a) Derive the relations between line values and phase values in a three phase star connection and delta connection with their connection and phasor diagram

(b) A balanced star connected inductive load is connected to a 440 V, 50 Hz supply system. Two wattmeters are used to measure supply power indicate 6KW and 4KW respectively. Determine (i) Line current (ii) Impedance of each phase (iii) Resistance and Inductance of each phase.

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

(a) What is the efficiency of a transformer derive the condition for maximum efficiency and KVA at maximum efficiency

(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) Why three phase synchronous motor is not self starting? Explain the methods of starting for this.

(b) Explain the working of dc motor and their types in detail.