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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations October-2020

ELECTRICAL MACHINES-II

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

- 1 a** With relevant phasor diagrams, explain the operation of a practical single phase transformer under no load condition. **6M**
- b** A 230/2300V transformer takes a no load current of 6.5A and absorbs 187W. If the resistance of primary is 0.06Ω , find (a) Core loss (b) no load power factor (c) active component of current and (d) magnetizing current. **6M**

OR

- 2 a** Discuss the constructional features of transformers. Draw neat diagrams. **6M**
- b** Derive the e. m. f. equation of a transformer. **6M**

UNIT-II

- 3 a** Discuss how you will perform O.C and S.C tests on a single phase transformer in the Laboratory. **8M**
- b** In a 50KVA Transformer, the iron loss is 500W and full load copper loss is 800W. Find the efficiency at full load and half load at 0.8 power factor lagging. **4M**

OR

- 4 a** Explain the procedure for conducting Sumpner's test along with all precautions to be taken while Conducting the test with neat diagram. **7M**
- b** Draw the equivalent circuit of an Auto transformer. **5M**

UNIT-III

- 5 a** A three phase induction motor is wound for 4 poles and is supplied from 50 HZ System. Calculate (i) synchronous speed (ii) speed of the motor when slip is 4% and (iii) Rotor current frequency when the motor runs at 600rpm. **6M**
- b** Explain the principle of operation of Induction motor. **6M**

OR

- 6 a** Draw and explain the Connection diagram of Y- Y & Δ - Δ connected three-phase transformer. **5M**
- b** Draw the Connection diagram of Y- Δ & Δ - Y connected three-phase transformer. **7M**

UNIT-IV

- 7 a** Derive the following (i) Torque equation of an induction motor (ii) Condition for Maximum Torque under running condition? **6M**
- b** Explain the Torque-Slip and Torque Speed characteristics of an 3-phase Induction motor. **6M**

OR

- 8 a** Explain no load tests and blocked rotor tests for a 3-phase induction motor. **6M**
- b** The input power to a 6-pole, 3-phase, and 50HZ induction motor is 42KW and the speed is 970rpm. The Stator losses are 1.2KW and the friction and windage losses are 1.8KW. Find (i) rotor cu loss and (ii) the efficiency of the motor. **6M**

UNIT-V

- 9 a** List out the types of starters used for starting of 3 – phase induction motors. Explain line starting of an induction motor. **6M**
- b** Briefly explain the working of star delta starter with a neat diagram. **6M**

OR

- 10 a** Explain in detail about the working of rotor rheostat starter with a suitable diagram. **6M**
- b** Calculate the value of resistance elements of 5 – step starter for 3-phase, 440V, wound rotor induction motor. The full load slip is 3%, rotor resistance / ph is 0.015. If (i) The starting current is limited to full load current. (ii) The starting current is limited to 1.5 times full load current. **6M**

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