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B.Tech.(EE) (2011 Onwards E-III) B.Tech.(Electrical & Electronics) (2011 & 2012 Batch E-III)

(Sem.-7,8)

ENERGY EFFICIENT MACHINES

Subject Code : BTEE-805D

M.Code: 71945

Time: 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) State the advantages of adjustable speed drives.
- b) What is the need of energy conservation?
- c) How cost of energy is expressed in two-part tarrif?
- d) Define the Efficiency of Electric Motor.
- e) What is the main disadvantage of using higher-silicon lamination steel in motors?
- f) Consider a 1000-kW load with a 60% power factor. Calculate the kVAr capacitance required to correct power factor to 90%.
- g) What is the effect of increasing rotor resistance on starting torque of induction motor?
- h) What is synchronous condenser?
- i) What is the effect of harmonic distortion on power factor?
- j) Define Displacement Power Factor.

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SECTION-B

- 2. Discuss the loss segregation method for determination of efficiency of a motor.
- 3. Explain and sketch the torque slip characteristics of three-phase induction motor.
- 4. Discuss the application of adjustable speed drives to pump load.
- 5. What is the need of energy auditing and management system? Explain in detail.
- 6. Explain the merits and demerits of energy efficient motors.

SECTION-C

- 7. Describe the procedure recommended by NEMA in detail, for selection capacitors at the motor location for power factor improvement.
- 8. Explain the different energy conservation methods required for domestic buildings.
- ricie cot cot kwww.firstRanker. Explain the following standards for energy efficient motors : 9.
 - a) IEEE Standard 112-1984
 - b) IEC Publication 34-2

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.