Roll No. ☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (Electrical Power System) (Sem.–3)
ENERGY EFFICIENT MACHINES
Subject Code : EEPS-302
M.Code : 51075

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

1. i) Explain how energy conservation can be achieved in industry and agriculture sectors.

    ii) Draw the speed torque characteristics of an induction motor and explain it in detail.

2. Define Efficiency. Discuss any two methods which are used in finding out the efficiency of a motor.

3. i) Define power factor. What are the causes of low power factor?

    ii) Find the power factor of an installation supplying the following loads :

    300 kW at unity power factor, 1000 kW at 0.9 lagging power factor and 1500 kW at 0.8 lagging power factor. Also find the maximum load at unity power factor which can be supplied by this substation.

4. i) Discuss the factors on which the selection of an energy-efficient motor depends.

    ii) Explain the types and characteristics of electric motor loads.

5. Discuss the applications of adjustable speed systems to pumps, fans and constant load torques.

6. Explain briefly :

    i)   Direct savings and pay back analysis

    ii) Efficiency evaluation factor

7. i)   What is tariff? Explain the different types of tariff.

    ii) An industrial undertaking has a connected load of 100 kW. The maximum demand is 80 kW. On an average each machine works for 60 % time. Find the yearly expenditure on electricity if the tariff is Rs. 8000 + Rs. 900 per kW of maximum demand per year + Re 2.40 per kWh.

8. Explain briefly :

    i)   Motor life cycle

    ii) Energy efficient motor standards.

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.