08/01/18

29

SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL NO: | | | | | | | | | | | | | **Total number of pages:[01]**

Total number of questions: 06

B.Tech. -EE/ 8th Sem

Energy Efficient Machines

Subject Code: BTEE-805D

Paper ID:

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (2×10)

Q1. Short-Answer Questions: All COs

(a) What do you mean by adjustable speed systems?
(b) Why is energy conservation a necessity in industries and farms?
(c) Give the applications of adjustable speed systems to constant torque load.
(d) Define efficiency and why we need more efficient motors?
(e) What do you mean by two part tariff method?
(f) Why we use harmonimeter and how it works?
(g) What is the main advantage of using two capacitors in single phase induction motor?
(h) Define NEMA and what are its various designs and their specifications?
(i) What is life cycle?
(j) What are the various factors responsible for the effectiveness of the system for specific application?

PART B (8×5)

Q2. What is power factor and explain the power factor in sinusoidal system? CO6

OR

What is power factor in non linear loads? Where to locate the capacitors for improved power factor. CO6

Q3. Explain the various factors affecting the efficiency of a motor and various types of losses occurring in a motor. CO3

OR

What do you mean by motor efficiency labeling and compare the efficiencies determined by various preferred methods? CO3

Q4. Explain the application of adjustable speed system to pumps. CO4

OR

Explain the application of adjustable speed system to fan. CO4

Q5. Explain and draw the single phase induction motor characteristics. CO5

OR

Explain and draw the three phase induction motor characteristics. CO5

Q6. Describe briefly standard motor efficiency and efficiency determination methods. CO1& 2

OR

Write the short notes on harmonics in induction motor and explain the power factor motor controllers with block diagrams and waveforms. CO1&CO2