SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | | **Total number of pages:[2]**

Total number of questions: 05

M.Tech. || EE || 3rd Sem

Energy Efficient Machines

Subject Code:MTEE-301A

Paper ID: (for office use)

Time allowed: 3 Hrs **Max Marks: 100**

Important Instructions:

- **Attempt all questions**
- **Each question carries 20 marks**
- **Assume any missing data**
- **Additional instructions, if any**

Q. 1. Describe briefly standard motor efficiency and efficiency determination methods. Explain the various factors affecting the efficiency of a motor and various types of losses occurring in a motor. CO2

OR

Compare various types of efficiency determination methods and which one is better amongst all? Explain Motor Efficiency Labeling and Energy Efficient Motor Standards. CO2

Q. 2. What is power factor? What is the need to improve power factor? explain the power factor in sinusoidal systems and Non Linear Loads? CO2

OR

Write the short notes on harmonics in induction motor and Where the capacitors should be placed to improve the Power Factor of the system? CO2
What is the Full Load power factor of 50 H.P, 1800 rpm Induction Motor operating at 230V, 3 Phase, 60 Hz ,Power system with permitted Efficiency of 0.915. What is KVAR rating to improve the Power Factor to 0.989?

Q. 3. What is Adjustable Speed System? Explain its applications for Fans, Pumps and Constant Torque Loads.. CO3

OR

Why Polyphase Induction Motors are supplied by Adjustable Frequency Power Supplies? Explain Varying Duty Applications, Voltage variation and Over motoring CO3

Q. 4. Explain Two Part Tariff Method, Present Worth Method with constant Power CO1

Costs, with increasing Power Costs and also explain Net Present Worth Method.

OR

a) Discuss the concept of 'Energy Audit' and suggest some means by which energy audit-is helpful in energy- conservation. CO1

b) Discuss the objectives and desirable characteristics of a tariff.

Q. 5. What is Motor Life Cycle? What are the various parameters effecting the Life of the motor? Explain the Direct Savings and Payback analysis Method and what is Efficiency calculation Factor. CO3

OR

CO3

a) Discuss the net present worth method for efficiency evaluation of as system. What are the drawbacks of payback period method?

b) (b) What are the various variables which should b~taken into account for determining the economic feasibility of an energy system?