SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

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B.Tech. || EE || 6th Sem

Electric Power Utilization

Subject Code: BTEE-601 (RP)

Paper ID: M/18

(2011-2014 batch)

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

Important Instructions:

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

PART A (10x 2marks)

Q. 1. Short-Answer Questions: All COs

(a) Why series motors are preferred for electric traction?
(b) Differentiate between candela and lux.
(c) What is arc welding?
(d) What are the qualities of good weld?
(e) What is group drive?
(f) What type of power supply is required for electrolytic processes?
(g) Why is ammonia the only refrigerant used in the absorption system?
(h) What are the causes of failure of heating elements?
(i) What are the different types of welding?
(j) Which of the system is preferred for main line railway service?

PART B (5×8marks)

Q. 2. Describe the construction and operation of arc heating. CO1

OR

What is the fundamental difference between electric spot welding and projection welding? CO1

Q. 3. Explain the construction and principle of operation of sodium vapour lamp. CO2

OR

What are the factors to be considered while designing lighting scheme? CO2

Q. 4. What is air conditioning? Draw the electric circuit of refrigerator and explain its working. CO3

OR

Differentiate between vapour compression refrigeration system and vapour absorption refrigeration system. CO3

Q. 5. In a three phase 440 V, 50 Hz, star connected 20 kW oven, the temperature of wire is 12000 C and that of charge is 7000 C. If the radiant efficiency is 0.6 and emissivity is 0.9, design the heating element. A strip of thickness 0.025 mm having resistivity $1.05*10^{-6}$ ohm-mt is used. CO4

OR

A 4- pole, 50 Hz induction motor has a flywheel on its shaft. Total inertia at the motor shaft is 1000 kg-m^2. Load torque is 100 kg-m for 10 seconds followed by a no load period long enough for the flywheel to regain its full speed. Motor has a slip of 6 % at a torque of 50 kg-m. Calculate the speed at the end of deceleration period. Assume motor speed torque characteristics to be a straight line in the region of interest and neglect friction and windage. CO4

Q. 6. What are the applications of electrolysis? Explain in brief. CO1

OR

What is electric traction? Discuss the different types of traction system. CO1