

Th4 - Utilization of Electrical Energy and Traction

Full Marks: 80

Time 3Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. What is Lambert's Cosine Law in illumination?
 - b. State any two applications of three phase induction motor.
 - c. What is Faraday's Second Law of Electrolysis?
 - d. What are the groups of systems of electric Traction?
 - e. Define(i) Energy efficiency (ii)MHSCP
 - f. Name any two types of arc welding.
 - g. State Stephen's law in electrical heating and the mode of heat transfer associated with it.
 - h. Write any two advantages of Vertical core type Induction furnace.
 - i. What is resistance welding? Give an example.
 - j. Write any two differences between DC and AC arc welding.
2. Answer **Any Six** Questions 5X6
 - a. Describe the extraction of aluminium in fused electrolyte process briefly.
 - b. Describe about the working principle of gas-filled lamp with the help of a neat diagram.
 - c. Explain the speed control of DC Traction motors by Series-Parallel control method.
 - d. Write a short note on Individual Drives.
 - e. Explain the single phase AC system of track electrification briefly.
 - f. Describe about the polar curves in illumination, and their uses with a neat diagram.
 - g. Explain the working principle of Indirect Arc Furnace with a neat sketch.
3. Describe the constructional features and operation of High Pressure Mercury Vapour lamp in details 10
4. Write a short note on i)spot welding ii) single phase AC system of track electrification. 10
5. Describe the three modes of Heat Transfer in substances briefly. 10
6. Write a short note on i) projection welding ii) speed control of DC Traction motors by Tapped field control method. 10
7. Explain the factors on which the design of simple lighting schemes depends. 10