

5TH SEM./ELECTRICAL /2022(W)

Th-4 Utilization of Electrical Energy and Traction

Full Marks: 80

Time- 3 Hrs

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. State Faraday's First Law of Electrolysis.
 - b. Define(i) Energy efficiency (ii)MHSCP
 - c. Write any two advantages of Vertical core type Induction furnace.
 - d. State the groups of systems of electric Traction.
 - e. Why primary winding coils are made hollow in coreless induction furnace?
 - f. What do you mean by invert squares law in illumination?
 - g. Write any two applications of electrolysis.
 - h. State Stephen's law in electrical heating and the mode of heat transfer associated with it.
 - i. What are the applications of DC motors?
 - j. What is resistance welding? Give an example.

2. Answer **Any Six** Questions 6 x 5
 - a. Describe about the polar curves in illumination in details.
 - b. Write a short note on metal arc welding using a neat circuit diagram.
 - c. Explain the extraction of zinc from zinc oxide in electrolyte process briefly.
 - d. Explain about the magnetic braking in electric traction briefly.
 - e. Describe the operating principle of dielectric heating with its applications.
 - f. Describe about the working principle of gas-filled lamp with a neat diagram.
 - g. Differentiate between DC and AC arc welding.

- 3 Explain the factors on which the design of simple lighting schemes depends. 10
- 4 Explain the three modes of Heat Transfer in substances briefly. 10
- 5 Explain the speed control of DC Traction motors by Metadyne control method briefly. 10
- 6 Describe the factors affecting the electro-deposition in electrolytic cell in details. 10
- 7 Write a short note on i)Projection welding ii) Single phase AC system of track electrification. 10