5TH SEM/ ELECTRICAL ./ 2023(W)NEW

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. Define solid angle.
   b. Why Alternating current is found most suitable for resistance welding?
   c. State Stephen's law of radiation.
   d. Define Electro-chemical equivalent of a substance.
   e. Define maintenance factor of illumination.
   f. What are the advantages of dielectric heating?
   g. Distinguish between Butt welding and Spot welding.
   h. Mention the advantages of electrification of track.
   i. What is a Group Electric Drive?
   j. What electrolytes must be used for refining the following metals.
   (i)Copper (ii) Iron

2. Answer **Any Six** Questions 6 x 5
   a. Explain the basic difference between electric arc welding and resistance arc welding.
   b. What are the factors on which the quality of electro-plating depends?
   c. Explain resistance heating and Classify it.
   d. Explain the laws of illumination.
   e. What are the advantages of electric traction over other systems?
   f. A 230 volt lamp has a total flux of 2000 lumens and takes a current of 0.4348 A. Calculate i) Lumens per watt (i.e. efficiency of the lamp) and ii) the MSCP per watt.
   g Discuss the characteristics of dc series motor.

Answer Any **Three** Questions.

3 (a) A current of 0.965A passing through Silver Nitrate solution for 10 minutes. Calculate the weight of silver deposited on the cathode. (Atomic wt. of silver =108 & valency factor=1) 5

(b) Explain various types of lightning scheme. 5

4 Discuss Regenerative braking and Magnetic braking. 10

5 Explain working of fluorescent tube with circuit diagram. What is the function of a choke and starter in fluorescent tube? 10

6 Discuss the Vertical core type inductance furnace and explain its working. 10

7 Write short notes on 10
   (a) Microwave heating.
   (b) Method of Choice of Electric Drives