END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JUNE 2025

Paper Code: EEE-320T **Subject: Utilization of Electrical Energy**

Time: 3 Hours **Maximum Marks: 75**

Note: Attempt five questions in all including question no. 1 which is compulsory. Select one question from each unit.

Q1 Attempt all **[5×5=25]**

a) What are the law of illumination?

b) A room with an area of 6 × 9 m is illustrated by ten 80-W lamps. The luminous efficiency of the Lamp is 80 lumens/W and the coefficient of utilization is 0.65.Find the average illumination?

c) Write the essential requirements of good heating element?

d) Explain the Types of Electrical braking.

e) Explain Principle and application of Faraday's law of electrolysis.

UNIT-I

Q2 Explain the following term(**Any two**) **[6.25×2=12.5]**

a) Luminous intensity.

b) Lamp efficiency.

c) Lambert's cosine law.

OR

Q3 a) Write down the Construction of mercury vapor lamp along with its working and application. **[6.25]**

b) Explain briefly the types of lighting schemes along with their uses. **[6.25]**

UNIT-II

Q4 a) Explain various methods of temperature control in resistance heating. **[6.25]**

b) Explain the working Principle of Dielectric Heating and its application. **[6.25]**

OR

Q5 a) Describe with neat sketches the various methods of electric resistance welding. Give its Merits and demerits. **[6.25]**

b) What is electric arc welding? Explain its type and discuss carbon arc welding. **[6.25]**

UNIT-III

Q6 a) Discuss the suitability of series motor for traction duties with the help of characteristics Curve. **[6.25]**

b) An electric train has an average speed of 42Km/h on a level track between stop 1400m apart. It is Accelerated at 1.7Km/h/s and broken at 3.3km/h/s. draw the speed time curve for the run. **[6.25]**

OR

Q7 a) An electric train scheduled at a speed of 55kmph (including a station stop of 40 sec) has a maximum speed of 80kmph. If the train accelerates at 2.0kmph/sec, determine the value of retardation when the distance between stops is 5 km. **[6.25]**

b) Define coefficient of adhesion as the ratio of tractive effort and derive the necessary expression with related illustrations. **[6.25]**

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UNIT-IV

Q8 a) Explain the working principle of electrolysis. What are the factors governing deposition process? **[6.25]**

b) Discuss various types of electroplating process. **[6.25]**

OR

Q9 a) What are energy storage devices. Explain briefly about Lithium ion batteries. **[6.25]**

b) Describe principle of operation of rechargeable alkaline batteries. What are their major disadvantage? **[6.25]**

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