Code No: 117JJ **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, November/December- 2018
UTILIZATION OF ELECTRICAL ENERGY
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a)	Give the examples for Continuous and Intermittent Loads.	[2]
b)	What do you mean by Load Equalization?	[3]
c)	Why Induction Heating is done at high frequencies?	[2]
d)	Compare AC and DC welding in any three aspects.	[3]
e)	What is use of photometry?	[2]
f)	State the Laws of Illumination.	[3]
g)	What are the special features of Traction Motor?	[2]
h)	Briefly explain about Regenerative Braking in traction motor.	[3]
i)	Define dead weight of a locomotive.	[2]
j)	Mention the factors effecting the Specific Energy Consumption in traction.	[3]

PART-B

(50 Marks)

2.a) Explain different methods available to control the speed of a DC motor.
b) Compare Group and Individual drives. [5+5]

OR

3. Explain the starting and operating characteristics of different DC motors. [10]

4. Explain the Operation of Arc Welding Plant with the help of a neat sketch. [10]

OR

5.a) Explain how insulating materials are heated using Dielectric Heating.
b) Explain the principle of Resistance Heating. Give its applications. [5+5]

6.a) Explain the role of Polar Curves in Illumination.
b) Discuss the basic principles of Light Control. [5+5]

OR

7. With help of a neat sketch, explain the construction and operation of High Pressure Mercury discharge lamp. [10]

8.a) Explain different parts of speed- time characteristics used for urban traction services.
b) Explain the mechanics of Train Movement. [5+5]

OR

9.a) Explain the advantages and disadvantages of any two traction systems.
b) An electric train has a maximum speed of 60 kmph. The scheduled speed including the station stop of 30 seconds is 40 kmph. If the acceleration is 1.5 kmphps, find the value of retardation when the average distance between the stops is 3 km. [5+5]

10. An electric train has an average speed of 42 kmph on a level track between stops 1400 m apart. It is accelerated at 1.7 kmphps and it is braked at 3.3 kmphps. Draw the speed time curve for the run. Estimate energy consumption at the axels of the train per tonne per km. Take the tractive resistance constant at 50 Newton per tonne and allow 10 percent rotational inertia. [10]

OR

11. Define the following Adhesive Weight, Coefficient of Adhesion and Tractive Effort. Explain what are the factors that affect them. [10]

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