R13

SET - 1

III B. Tech II Semester Supplementary Examinations, November- 2019
UTILIZATION OF ELECTRICAL ENERGY
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A   (22 Marks)

1	a)	List out types of electric loads based on torque.	[3M]
	b)	List out various welding processes used in general engineering.	[4M]
	c)	Define Lux, Lumen, and Luminous intensity.	[4M]
	d)	List out the important features of a fluorescent lamp.	[4M]
	e)	List out advantages and disadvantages of electric drives used in traction.	[4M]
	f)	Define the terms: Dead weight, Adhesive weight and Accelerating weight.	[3M]

PART –B   (48 Marks)

2	a)	Write the necessity of starting equipment for a motor. Explain about various starting characteristics of DC motors and Induction motors.	[8M]
	b)	Deduce the necessary expression for the temperature rise of an electric machine.	[8M]
3	a)	List out the advantages and explain about the applications of dielectric heating.	[6M]
	b)	Discuss about the criteria to select frequency for heating processes.	[4M]
	c)	Explain about seam welding and projection welding methods.	[6M]
4	a)	Show that the amount of light falls on an area is inversely proportional to the square of the distance from source. And also explain about Lambert's cosine law.	[8M]
	b)	Classify and explain about the sources of light based on principle of operation.	[8M]
5	a)	Distinguish the tungsten filament and fluorescent tubes.	[6M]
	b)	Explain the step by step procedure to calculate the amount of flood lighting.	[6M]
	c)	Explain the working principle of LED lighting.	[4M]
6	a)	Define coefficient of adhesion as the ratio of tractive effort and derive the necessary expression with related illustrations.	[6M]
	b)	Explain the reasons for having greater coefficient of adhesion in electric traction when compared to steam traction.	[4M]
	c)	An electric train scheduled at a speed of 55 kmph (including a station stop of 40 sec) has a maximum speed of 80 kmph. If the train accelerates at 2.0 kmph/sec, determine the value of retardation when the distance between stops is 5 km.	[6M]
7	a)	Explain about the factors affecting energy consumption in propelling the train.	[8M]
	b)	Explain the effect of varying acceleration and braking retardation in traction.	[8M]

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