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Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)



B. Tech (Seventh Semester - Regular) Examinations, November – 2024

21BELPE47021 – Utilization of Electrical Energy (Electrical Engg.)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. List the properties of heating element material.	CO1	K1
b. Define speed-time curve. State its use.	CO4	K1
c. Define Horizontal polar curve and vertical polar curve.	CO2	K1
d. State the laws of illumination.	CO3	K1
e. List the requirements of an ideal traction system.	CO5	K1

PART – B

(15 x 4 = 60 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Describe various resistances welding process.	7	CO1	K2
b. State causes of failure of heating element.	8	CO1	K1
(OR)			
c. Explain the various methods of welding.	8	CO1	K2
d. List the different properties that are required for a good heating material.	7	CO1	K1
3.a. Explain the working of mercury vapour lamp with diagram.	8	CO2	K2
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.	7	CO2	K2
(OR)			
c. Explain working of fluorescent tube with circuit diagram. What is the function of a choke and starter in fluorescent tube?	8	CO2	K2
d. Describe the construction and working principal of mercury vapour lamp.	7	CO2	K2
4.a. Explain the mechanism of train movement.	7	CO3	K2
b. Describe the various methods of traction motor control.	8	CO3	K2
(OR)			
c. Why electrical drives produce noise? How it is reduces?	8	CO3	K2
d. What is Specific energy consumption and list the factors that affect it.	7	CO3	K2
5.a. Explain mechanical features of traction motors.	8	CO4	K2
b. A 200V dc shunt motor running at 1000rpm takes an armature current of 17.5A. It is required to reduce the speed to 600rpm, what must be the value of resistance to be inserted in the armature circuit if the original armature resistance is 0.4Ω ? Take armature current to be constant during the process.	7	CO4	K2
(OR)			
c. Explain the following terms i) MSCP ii) MHCP	8	CO4	K2
d. Discuss why a D.C series motor is ideally suited for traction services.	7	CO4	K2

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