

PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, May- 2024
UTILIZATION OF ELECTRICAL ENERGY
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70M

Answer ONE Question from each Unit
 All Questions Carry Equal Marks

Q. No.	Questions	BTL	CO	Marks
UNIT – I				
1.	a) Define the following terms with their mathematical expressions (i) Luminous intensity (ii) Lumen (iii) Candle Power (iv) Brightness (or) luminance	K1	CO1	7M
	b) A lamp of 500 W having a MSCP of 400 is suspended 2 meters above the working plane. Calculate (i) Lamp efficiency (ii) Illumination at a point 3 m away on the horizontal plane from vertically below the lamp.	K3	CO1	7M
OR				
2.	a) Explain the construction and working of sodium vapor lamp	K2	CO1	7M
	b) A room of 12 x 12 x 4 is to have direct lighting, giving illumination of 80 Lux, on a working plane 70cm above the floor. Coefficient of utilization is 0.5 and maintenance factor 0.8. If efficiency of lamps available is 14.75 lumens/watt, find the number of lamps and their rating.	K3	CO1	7M
UNIT – II				
3.	a) Explain the factors that should be taken into account for the selection of motor for a given application	K2	CO2	7M
	b) Discuss the advantages and disadvantages of electric drive over the other drives	K2	CO2	7M
OR				
4.	a) Describe the various types of industrial loads	K2	CO2	7M
	b) Explain the term “Load Equalization” and give its significance and its role in Electric drives	K2	CO2	7M
UNIT – III				
5.	a) Explain the advantages of electric heating over conventional heating.	K2	CO3	7M
	b) What is Dielectric heating? Explain the principle of dielectric heating. Give its advantages and Applications.	K2	CO3	7M
OR				
6.	a) Explain the resistance welding with neat diagram	K2	CO3	7M
	b) Compare AC and DC welding	K1	CO3	7M
UNIT – IV				
7.	a) Describe quadrilateral speed time curve with neat diagram	K2	CO4	7M
	b) The average speed of an electric train on level track is 35 kmph between two stations which are 1.5 km apart. Draw the speed time curve with all values, if it is accelerated at 2 Kmphs and braked at 3 kmphs.	K3	CO4	7M

OR					
8.	a)	Explain the following terms : (i) Adhesive Weight (ii) Dead weight (iii) Coefficient of adhesion	K2	CO4	7M
	b)	A 400 tonne goods train is to be hauled by a locomotive up a gradient of 1 in 50 with an acceleration of 1.6 kmphps. Determine the weight of the locomotive. Assume coefficient of adhesion as 0.3, track resistance 40 N/tonne and effective rotating masses as 10% of dead weight.	K3	CO4	7M
UNIT – V					
9.	a)	Explain the Need for Energy store system	K1	C05	7M
	b)	Explain about the Electrical storage systems.	K2	C05	7M
OR					
10.	a)	Explain about the Chemical storage systems.	K2	C05	7M
	b)	Compare different types of energy storage systems.	K2	C05	7M