

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Fifth/Sixth Semester

Electrical and Electronics Engineering

EE3001 - Utilization and Conservation of Electrical Energy

Regulations – 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Draw the block diagram of an electric drive system.	L1	1	2
2.	Define tractive effort and write the equation for total tractive effort.	L2	1	2
3.	Define illumination and lumens.	L2	2	2
4.	If the total lumens required are 7200 and coefficient of utilization is 0.3, calculate lamp lumens required.	L2	2	2
5.	Mention the applications of dielectric heating.	L1	3	2
6.	What are the factors that affect the welding time in resistance welding?	L1	3	2
7.	What is energy conservation act 2001?	L1	4	2
8.	List the methods of energy conservation applicable to domestic electric load.	L1	4	2
9.	Specify the types of batteries and their corresponding application.	L2	5	2
10.	What is the need for earthing?	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a i What are the different factors to be considered for choice of an electric motor? Explain in detail.	L2	1	8
	ii Explain the types of braking applied in traction.	L2	1	8
Or				
b i	Discuss in detail the trapezoidal speed time curve and derive the equation for maximum speed.	L2	1	8
	ii A suburban electric train has a maximum speed of 65kmph. The scheduled speed including a station stop of 30s is 43.5 km. If acceleration is 1.3 kmph/s, find the value of retardation when the distance between the station is 3km. Assume trapezoidal speed time curve.	L4	1	8

12.	a	i	Explain the working of high pressure mercury vapour lamp system	L3	2	8
		ii	A lamp of 500 C.P. is hung at the centre of a room 8*6 m ² at a height of 3m from floor. Calculate the maximum and minimum illumination produced and mention the places where it occurs.	L3	2	8
Or						
	b	i	Explain the principle behind street lighting and flood lighting.	L3	2	8
		ii	A 2000 square meter shop floor area of an engineering industry is to be illuminated with a light level of 200 lux with 250 watts metal halide lamp fittings. The coefficient of light utilization is 0.6 and depreciation is 1.2 . Calculate the no of lamp fittings required and total lighting power required Luminous efficacy of metal halide lamps is 90 lumens per watt.	L3	2	8
13.	a		Explain induction and dielectric heating.	L2	3	16
Or						
	b		Discuss in detail the types of arc welding.	L2	3	16
14.	a		Explain in detail the features of energy conservation act 2001.	L3	4	16
Or						
	b		Discuss in detail the energy conservation methods used in industries.	L3	4	16
15.	a		Explain the working of Air-conditioning system and discuss the types of air conditioning system.	L3	5	16
Or						
	b		What is the importance of UPS and discuss in detail various types of UPS and the working principle of the same.	L3	5	16