

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 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)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define average speed and scheduled speed.	L2	1	2
2.	Draw the speed-torque characteristics of an ideal traction system drive.	L2	1	2
3.	State the Laws of illumination.	L1	2	2
4.	What is meant by stroboscopic effect in a fluorescent lamp?	L2	2	2
5.	Give the applications of induction heating.	L2	3	2
6.	List the four merits of electrically produced heat.	L2	3	2
7.	What is the main function of Bureau of Energy Efficiency under the Energy Conservation Act?	L2	4	2
8.	Why energy conservation is important in electrical drives?	L2	4	2
9.	Write the principle of operation of an air conditioning system.	L2	5	2
10.	Define Total Harmonic Distortion in an electrical appliance.	L1	5	2

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

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Draw and explain the functional block diagram of an electric drive system. Also compare AC and DC drives.	L3	1	16
	Or			
	b i What are the various types of electric braking used in electric traction? Discuss any two types in detail.	L3	1	10
	ii List the factors governing in scheduled speed of a train.	L3	1	6
12.	a Explain the operation of following with neat diagrams: i. Fluorescent lamp ii. Sodium Vapour lamp	L2	2	16
	Or			
	b i List the various types of lamps commercially available. Also discuss about the energy efficient lamps for domestic and industrial lighting applications.	L2	2	8
	ii Write notes on different types of indoor and outdoor lighting with neat sketches.	L2	2	8

13.	a	i	Describe the construction and operation of coreless induction furnace with neat diagrams.	L2	3	8
		ii	Explain the working principle of welding transformer.	L2	3	8
Or						
	b	i	Explain the process of dielectric heating and mention its applications.	L2	3	8
		ii	With necessary diagrams, explain the operation of arc welding.	L2	3	8
14.	a	i	What are the parameters of power quality? Briefly explain any four parameters in detail.	L2	4	8
		ii	Discuss the main objectives of Energy Conservation Act 2001.	L2	4	8
	Or					
	b	i	Why energy conservation is important in industries? List the energy conservation methods used in industry.	L2	4	8
15.	a	i	Analyze in detail about the power quality aspects in nonlinear and domestic loads.	L4	5	8
		ii	Explain the operation of online ups with a block diagram. What is the difference between offline UPS and online UPS?	L4	5	8
	Or					
	b		Explain the working principle and operation of air conditioning system with neat diagram.	L4	5	16