

Reg.No.: 

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN  
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]  
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

**Question Paper Code: 80018**

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024

Fifth Semester

Electrical and Electronics Engineering

U19EEV16 – UTILIZATION OF ELECTRICAL ENERGY

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels	K1 – Remembering	K3 – Applying	K5 - Evaluating
(KL)	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q. No.	Questions	Marks	KL	CO
1.	Classify different electric heating methods.	2	K1	CO1
2.	Compare plastic welding & fusion welding.	2	K2	CO1
3.	Recall the material that is mostly used for the filament of incandescent lamps and tell the reason.	2	K1	CO2
4.	Define (i) waste light factor (ii) depreciation factor	2	K1	CO2
5.	Compare induction and convection ovens.	2	K2	CO3
6.	Illustrate the advantages of online UPS over offline UPS.	2	K2	CO3
7.	Compare A.C traction with D.C traction with necessary examples.	2	K2	CO4
8.	“Series motor is preferred for the electric traction”. Identify the reasons.	2	K3	CO4
9.	Define coefficient of performance.	2	K1	CO5
10.	List out the desirable properties of ideal refrigerant.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11.	a) Explain the different methods of electric welding and their relative advantages.	13	K2	CO1
	(OR)			
	b) Explain in detail how heating is done in the following cases: i. Resistance heating. ii. Induction heating. iii. Dielectric heating.	13	K2	CO1
12.	a) A room $9\text{m} \times 12\text{m}$ is illuminated by twelve 100 watt lamps. The luminous efficiency of the lamp is 30 lumens per watt and the co-efficient of utilization as 0.45. find the average illumination.	13	K4	CO2
	(OR)			
	b) When a 250v lamp takes a current of a 0.8 ampere, it produces a total flux of 3,260 lumens calculate i. M.S.C.P of the lamp ; and ii. efficiency of the lamp.	13	K4	CO2
13.	a) Evaluate the design procedure of substation grounding system to limit the fault current.	13	K2	CO3
	(OR)			
	b) Illustrate Uninterrupted power supply? Evaluate and explain various uninterrupted power supply used for electrical appliance.	13	K2	CO3
14.	a) Explain plugging, rheostatic braking and Regenerative braking methods employed with DC series motor for speed control.	13	K5	CO4
	(OR)			
	b) For a quadrilateral speed-time curve of an electric train, estimate the expression for the distance between stops and speed at the end of the coasting period.	13	K5	CO4
15.	a) Explain the functioning of different types of water cooler with neat diagram.	13	K2	CO5
	(OR)			
	b) Illustrate the working principle of Air-conditioning system and explain on outdoor type domestic Air-conditioning systems.	13	K2	CO4

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	A lamp fitted with 120 degrees angled cone reflector illuminates circular area of 200 metre in diameter. The illumination of the disc increases uniformly from 0.5 metre-candle at the edge to 2 metre-candle at the centre. Determine i. The total light received ii. Average illumination of the disc iii. Average c.p. of the source.	15	K5	CO2
(OR)				
b)	A train is required to run between stations 1.6kms apart at an average speed of 40km/hr. The run is to be made from a quadrilateral speed-time curve. The acceleration is 2km/hr/sec. The coasting and braking retardations are 0.16km/hr/sec and 3.2km/hr/sec respectively. Determine the duration of acceleration, coasting and braking and the distance covered in each period.	15	K5	CO4