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: 80027

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – JAN. 2025
Sixth Semester
Electronics and Communication Engineering
U19EEOE6 – ENERGY EFFICIENT LIGHTING SYSTEM
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

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

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Classify the types of illumination of light.	2	K2	CO1
2.	List the methods of artificial lighting.	2	K1	CO1
3.	State Lambert's cosine law.	2	K1	CO2
4.	Define Luminous flux and luminous intensity.	2	K2	CO2
5.	How do you calculate the space to the mounting ratio for indoor lighting?	2	K3	CO3
6.	Define Maintenance factor.	2	K2	CO3
7.	What are the factors to be considered to design street lighting?	2	K2	CO4
8.	Name the lamps used in street and flood lighting schemes.	2	K2	CO4
9.	What are the ways renewable energy can be adapted in lighting systems?	2	K3	CO5
10.	Mention advantages of LED over other lamps.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Explain the methods and types of lighting used in energy efficient systems.	13	K2	CO1
		(OR)			
	b)	Explain how the factors like shadow, glare, reflection, Color rendering, and stroboscopic effect affect the lighting systems.	13	K2	CO1
12.	a)	Write short notes on i. Incandescent light ii. Fluorescent light and iii. LED light. Compare the lighting source with its advantages.	13	K2	CO2
		(OR)			
	b)	The candle power of a source is 200 candela in all directions below the lamp. The mounting height of the lamp is 6 m. Find the illumination: i. Just below the lamp. ii. 3 m horizontally away from the lamp on the ground. iii. The total luminous flux in an area of 1.5 m diameter around the lamp on the ground.	13	K4	CO2
13.	a)	Recommend various Indian standards and standard practices to be adopted for illumination areas.	13	K3	CO3
		(OR)			
	b)	Explain the design of the indoor lighting system by Lumen's method.	13	K2	CO3
14.	a)	Explain the pole arrangement scheme of street lighting and obtain expression to compute average and specific Illuminance on the Road Surface.	13	K3	CO4
		(OR)			
	b)	Explain the design features of the outdoor street lighting with suitable example.	13	K3	CO4
15.	a)	Explain various energy-efficient discharge lamps and different types of electronic ballasts.	13	K2	CO5
		(OR)			
	b)	Explain various of renewable energy based lighting system.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	An indoor office has the following dimensions: 20x10x3(length, width, height). The ceiling to desk height is 2m. The area is to be illuminated 250 lux using twin lamp 32 W CFL luminaries with SHR 1.25. Each lamp has an efficiency of 85 lumens per watt. Maintenance factor:0.63, Utilization factor:0.69, SHR:1.25. Calculate the wattage of each lamp.	15	K3	CO3
		(OR)			
	b)	The luminous intensity of a source is 600 candela placed in the middle of a 10 × 6 × 2 m room. Calculate the illumination: i. At each corner of the room. ii. At the middle of the 6-m wall.	15	K3	CO2