Reg No.:_____ Name:_____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech (Hons) Degree Examination July 2021 (2018 Admission)

Course Code: EE366

Course Name: ILLUMINATION TECHNOLOGY

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1		Explain the terms colour rendering and stroboscopic effect	(5)
2		State and explain laws of illumination	(5)
3		Explain the terms DLOR and ULOR	(5)
4		Explain different lighting schemes used in street lighting with appropriate sketches	(5)
5		Define Flood lighting. How projectors are classified based on beam angle	(5)
6		The front of a building 50m x16m is illuminated by sixteen 1000watt lamps arranged so that uniform illumination on the surface is obtained. Assuming a luminous efficiency of 17.4 lumen per watt and CU 0.4. Determine the illumination on the surface if DF=1.3 and WLF=1.2.	(5)
7		Explain design criteria of sports lighting	(5)
8		What are different features of auditorium lighting	(5)

PART B

Answer any two full questions, each carries 10 marks.

9	a)	Explain day lighting and artificial lighting	(5)
	b)	A small area 7.5 m in diameter is to be illuminated by a lamp suspended at a height of 4.5 m over the centre of the area. The lamp having an efficiency of 20 lm/w is fitted with a reflector which directs the light output only over the surface to be illuminated, giving uniform candlepower over this angle. Utilisation coefficient = 0.40. Find out the wattage of the lamp. Assume 800 lux of illumination level from the lamp	(5)
10	a)	What are different lighting systems employed in interior lighting	(5)
	b)	How polar curves are used to find MSCP and MHCP	(5)

11 a) What is glare ? How it is classified (4)

b) Define the terms luminous flux, luminous intensity , candle power (6)

PART C

Answer any two full questions, each carries 10 marks.

12 a) The total , upward and downward light output from a luminaire are1200 lm,400 lm,600 lm respectively. Find LOR and percentage of light energy absorbed in luminaire (5)

b) Define the terms highway, carriage way, kerb, outreach, mounting height (5)

13 a) Define maintenance factor , light loss factor and reflection factor (6)

b) List various arrangements in street lighting (4)

14 a) Explain different types of luminaires used in interior lighting (5)

b) Calculate distance between each street light pole having following details, width of road is 11.5 foot, height of pole is 26.5 foot ,Wattage of luminaire is 250 watt , lamp output is 33200 lumen, required lux level (E) is 5 lux .coefficient of utilization is 0.18 .lamp lumen depreciation factor (LLD) is 0.8 , Luminaries dirt Depreciation Factor (LDD) = 0.9 (5)

PART D

Answer any two full questions, each carries 10 marks.

15 a) Explain various lamps used in flood lighting (4)

b) Explain features of hospital lighting (6)

16 a) What are various factors affecting the choice of a projector (2)

b) Explain the purpose of flood lighting (2)

c) What are the issues related to outdoor sports lighting (6)

17 a) It is desired to flood the front of a building 80m x10m. Illumination level required is 100lux and the projectors can be placed within 20-60m distance. (7)

CU=0.4, WLF=1.2, DF= 1/1.3

Available lamps:

Tungsten Halogen 1000Watts, 20lm/watt

Metal Halide 400Watts,

HPSV 250Watts, 110lm/watt

Estimate the number and size of circular projectors for the energy efficient and sustainable scheme. Justify the answer. Comment on the beam spread.

b) Explain the need of aesthetic lighting (3)

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