

Reg No.: _____

Name: _____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree (S,FE) Examination May 2022 (2015 Scheme)



Course Code: EE366

Course Name: ILLUMINATION TECHNOLOGY

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

Marks

- 1 Compare Generalised and localised lighting schemes (5)
- 2 A 250 V lamp has a total flux of 1500 lumens and takes a current of 0.4 A. Calculate Efficacy of lamp and MSCP/watt (5)
- 3 Define coefficient of utilization. List out the factors on which coefficient of utilization depends. (5)
- 4 What are the special features required for entrance and corridor lighting? (5)
- 5 Compare with examples symmetrical distribution luminaire and asymmetrical distribution luminaire used in flood lighting. (5)
- 6 List the guidelines applied while selecting a floodlighting equipment? (5)
- 7 Explain how the lighting used in hospitals impacts on the Psychological senses of the patients? (5)
- 8 Explain the features of auditorium lighting? (5)

PART B

Answer any two full questions, each carries 10 marks.

- 9 Explain with neat sketches, the different types of lighting systems used in artificial lighting indicating the percentage of light flux emitted. (10)
- 10 a) Discuss in detail the concept and significance of Polar curve in illumination engineering. (5)
b) Write short note on Glare and its types. Also mention how it can be avoided while designing an interior lighting system. (5)
- 11 a) Six lamps are used to illuminate a certain room. If the luminous efficacy of each lamp is 11 lm/watt and the lamps are emitting a total flux of 10000 lm. Calculate a) MSLI /Lamp b) Energy consumed in 10 hours (5)
b) State and explain Lambert's Cosine Law of illumination. (5)

PART C

Answer any two full questions, each carries 10 marks.

- 12 a) A factory area is 40m long, 20 m wide and is 8m high. Point source luminaires (5)
are suspended 1.5m below ceiling level. The working plane is 1m high. Calculate
the minimum number of luminaires which must be installed to conform with a
recommended SHR of 1.5 : 1
- b) Explain the terms a) Uniformity ratio b) Depreciation factor (5)
- 13 Design a roadway lighting scheme with the following data (10)
Width of the road way = 18 m
Illumination required = 15 lux
Mounting height of poles = 9m
Arm length = 2 m
Assume that the lamps are placed on the median at the centre of road and each
lamp post carries 2 lamps, each on either side. Take coefficient of utilization as
0.6, light loss factor as 0.7 .Two lamps are provided , one with 100 W and 9500
lumen and second with 150 W and 16000 lumen. Select the most suitable lamp
for the design clearly indicating reason.
- 14 a) With neat sketches show the different types of layouts used in street lighting? (5)
b) Write short note on Light output ratio of a luminaire. List the factors affecting (5)
LOR.

PART D

Answer any two full questions, each carries 10 marks.

- 15 a) Define the terms a) Beam factor b) waste light factor associated with flood (5)
lighting?
- b) Design the flood lighting scheme for a stadium of length 100 m and width 50 m (5)
,using 1000 watt discharge lamps with a lumen output of 92000 lumens. Assume
 $E = 300 \text{ lux}$, $WLF = 1.2$, $CU = 0.8$ and $MF = 0.5$
- 16 Explain the requirements of lighting to be used in Wards and operation theatres (10)
in a hospital?
- 17 a) Explain target aiming and degree aiming used in floodlighting? (5)
b) Discuss the features of statue and monument lighting? (5)
