

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S4 (R) Examinations April 2026 (2024 Scheme)



Course Code: PEEET418
Course Name: ILLUMINATION TECHNOLOGY

Max. Marks: 60

Duration: 2 hours 30 minutes

PART A

(Answer all questions. Each question carries 3 marks)

		CO	Marks
1	Define Unified Glare Rating (UGR) and Visual Comfort Probability (VCP).	1	(3)
2	With a neat diagram explain the working of Incandescent lamp.	2	(3)
3	Define M. H. C. P., M. S. C. P., and M. H. S. C. P. of a lamp.	3	(3)
4	A lamp giving out 1200 lumens in all directions is suspended 8 m above the working plane. Calculate the illumination at a point on the working plane 6m away from the foot of the lamp.	3	(3)
5	Define Space to Mounting height ratio and explain its significance in interior lighting.	4	(3)
6	Mention 3 special features of entrance lighting.	4	(3)
7	Elaborate on the different types of lighting fixtures and their suitable application.	5	(3)
8	Mention a few energy efficient lighting systems available.	5	(3)

PART B

(Answer any one full question from each module, each question carries 9 marks)

Module -1

9	Explain in detail the factors affecting lighting?	1	(9)
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OR

10	a) Differentiate between Day lighting and Artificial lighting.	2	(6)
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- b) Explain the working of LED lamp with proper diagram. 2 (3)

Module -2

- 11 a) With neat diagram explain the measurement of M. S. C. P. by integrating spheres. 3 (6)
- b) Explain the principle of simple photometry. 3 (3)

OR

- 12 A drawing office containing a number of boards and having a total effective area of 70 m^2 is lit by a number of 40 W incandescent lamps giving 11 lm/W. An illumination of 80 lux is required on the drawing boards. Assuming that 60% of the total light emitted by the lamps is available for illuminating the drawing boards, estimate the number of lamps required. 3 (9)

Module -3

- 13 A classroom $15 \text{ m} \times 10 \text{ m}$ and 3 m high is to be illuminated to an average level of 400 lux. Recessed luminaires each containing 2 lamps of 1800 lumens are to be used. Assume Utilisation Factor = 0.6, Maintenance Factor = 0.8, Space to Height Ratio = 1.5, Desk height = 0.75 m 4 (9)

Find:

1. Number of luminaires required
2. Spacing between luminaires and sketch the layout.

OR

- 14 a) Explain the following terms 4 (6)
- (i) Maintenance factor (ii) Uniformity ratio (iii) Direct ratio (iv) Coefficient of utilisation,
- b) State the level of illumination required for atleast 6 working planes. 4 (3)

Module -4

- 15 a) A building façade $40\text{ m} \times 20\text{ m}$ is to be illuminated with an average illumination of 100 lux . The lamps used are 1000 W lamps having a luminous efficiency of 18 lumens/W . Determine the number of lamps required. 5 (6)

Assume: Coefficient of utilization = 0.45 , Depreciation factor = 1.3 , Waste light factor = 1.2

- b) What are the various arrangements in street lighting? 5 (3)

OR

- 16 Explain in detail the safety considerations required in public lighting. 5 (9)
