

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R,S) (FT/WP) (S5 PT) Examination November 2025 (2019 Scheme).

Course Code: EET463**Course Name: ILLUMINATION TECHNOLOGY****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

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| 1 | Define glare and explain its effects. | (3) |
| 2 | Explain colour rendering and its significance in lighting design. | (3) |
| 3 | Explain the working principle of a photometric bench. | (3) |
| 4 | Explain the terms MHCP, Luminous Flux and Luminous intensity. | (3) |
| 5 | Define maintenance factor and uniformity ratio. | (3) |
| 6 | Explain spacing-to-mounting height ratio and its importance in interior lighting design. | (3) |
| 7 | Define waste light factor and beam spread angle associated with flood lighting. | (3) |
| 8 | What are the objectives of tunnel lighting? | (3) |
| 9 | List out the key considerations in hospital lighting | (3) |
| 10 | What are the features to be considered in sports lighting design? | (3) |

PART B*Answer any one full question from each module, each carries 14 marks.***Module I**

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| 11 | a) With the help of a neat sketch, explain the construction and working of a high pressure sodium vapour lamp. | (7) |
| | b) Explain stroboscopic effect and how it affects perception of motion. | (7) |

OR

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| 12 | a) Describe the working of a metal halide lamp with a neat sketch. | (7) |
| | b) Explain supplementary artificial lighting and its applications. | (7) |

Module II

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| 13 | a) With neat figures, explain Inverse Square Law and Lambert's Cosine Law. | (7) |
| | b) Explain the working of an integrating sphere used in illumination measurements. | (7) |

OR

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| 14 | a) Construct Rousseau's Diagram and explain its use in determining MSCP. | (7) |
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- b) Two light sources of 500 cd each are mounted at an 8 m height and 30 m apart. Find (7)
(i) illumination directly under one lamp and (ii) illumination midway between them.

Module III

- 15 a) Define DLOR, ULOR, and LOR with neat sketches, and explain their significance. (7)
b) A hall of $20 \times 15 \text{ m} \times 5 \text{ m}$ is to be illuminated with 250 lux. Determine the number (7)
of 500 W fluorescent tubes required and show the arrangement. Assume utilization
factor = 0.6, maintenance factor = 0.77 and efficiency = 25 lm/W.

OR

- 16 a) Explain four types of lamp fixtures used in interior lighting. (7)
b) Explain design steps in the Lamp Lumen Method. (7)

Module IV

- 17 a) What are the principles and key parameters involved in street lighting design? (7)
b) Discuss the classification of flood lighting projectors and their beam types. (7)

OR

- 18 a) A building facade measuring $30 \times 10 \text{ m}$ is to be floodlit with uniform 80 lux. (7)
Determine the number of lamps (40W lamps with 17 lm/W efficacy, Coefficient of
Utilisation = 0.4, Maintenance factor = 0.77, waste light factor = 1.2)
b) Explain tunnel lighting zones and corresponding illumination levels. (7)

Module V

- 19 a) Explain the lighting requirements for hospital wards and operation theatres. (7)
b) Briefly describe the principles underlying aesthetic and accent lighting. (7)

OR

- 20 a) Explain the design considerations for auditorium lighting. (7)
b) Describe the features of statue and monument lighting schemes. (7)
