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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R, S) / S5 (PT) (R,S) Examination November 2024 (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

- | | | |
|----|---|-----|
| 1 | Write a short note on veiling reflection. | (3) |
| 2 | List 3 qualities of good lighting system. | (3) |
| 3 | Define the terms i) MHCP ii) MSCP iii) MHSCP | (3) |
| 4 | What are polar curves? | (3) |
| 5 | How does temperature and voltage variation affect lamp lumen output? | (3) |
| 6 | Explain Spacing to Mounting Height Ratio. | (3) |
| 7 | List out at least 3 requirements of effective street lighting. | (3) |
| 8 | Draw the different zones of tunnel with required value of illumination. | (3) |
| 9 | What are lighting controllers? | (3) |
| 10 | Why is lighting design using software important? | (3) |

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

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| 11 | a) Classify and explain different types of lighting systems according to light distribution. | (7) |
| | b) Explain with a neat diagram the principle and working of LED. | (7) |

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- 12 a) Describe with a neat diagram the principle and working of Mercury Vapour Lamp. (7)
- b) Explain stroboscopic effect and flicker of lighting systems. (7)

Module II

- 13 a) How can light be measured using an Integrating Sphere? (7)
- b) Two lamps A and B of 200 candela and 400 candela respectively are situated 100m apart. The height of A above the ground level is 10m and B is 20m. Calculate the illuminance at the centre of the line joining the two lamp posts. (7)

OR

- 14 a) How can light be measured using Goniophotometer? (7)
- b) Two light sources having luminous intensity 400 candela are hung at a height of 10m. Determine the horizontal distance between the two lamp posts if the illumination in the middle of the posts is 2.828 lux. (7)

Module III

- 15 a) Write short note on a) corridor lighting and b) staircase lighting. (7)
- b) Estimate the number of lamps which would be required to illuminate a workspace of 30 x 20 m by means of 500W lamps mounted 5m above the working plane. The average illumination required is about 144 lux. Utilisation factor is 0.6, maintenance factor is 0.75 and luminous efficiency is 16lm/W. Assume SHR as unity. Draw the arrangement of lamps. (7)

OR

- 16 a) The total, upward and downward light output from a luminaire are 1600 lm, 400 lm, 800 lm respectively. Find DLOR, ULOR, LOR and percentage of light energy absorbed in luminaire (7)
- b) Illustrate and explain fixtures used for interior lighting. (7)

Module IV

- 17 a) Discuss the factors to be considered for street lighting. What is the level of illumination required for different types of street? (7)
- b) The front of a building 25×12 m is illuminated by 20 lamps of 1200W each. Its arranged so that uniform illumination is obtained on the surface. Assume luminous efficiency of 30 lumens/W, $DF = 1.3$, waste light factor 1.2 and coefficient of utilization as 0.75. Determine the illumination on the surface. (7)

OR

- 18 a) Define i) LLF ii) LLD iii) LDD iv) EF. What is the relation between them? (7)
- b) Explain briefly about flood lighting. What factors have to be considered for designing a flood lighting scheme? (7)

Module V

- 19 a) Write a short on sports lighting. (7)
- b) Explain the features of lighting different areas of a hospital. (7)

OR

- 20 a) Describe the features of statue lighting. (7)
- b) Explain auditorium lighting. (7)
