Register No.:　.................................　Name:　...

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 2024
ELECTRICAL AND ELECTRONICS ENGINEERING
(2020 SCHEME)

Course Code :　20EET461

Course Name:　Illumination Technology

Max. Marks　:　100　　　　　　　　　　　　　　　　**Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. What are the characteristics of good lighting scheme?
2. Differentiate between day lighting and artificial lighting.
3. Define the terms a) illumination b) luminous flux c) luminous intensity
4. 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. Define coefficient of utilization. List out the factors on which coefficient of utilization depends.
6. Define the terms a) space – height ratio b) maintenance factor.
7. What are the requirements of a good street lighting system?
8. Explain the purpose of flood lighting.
9. Enlist the main features to be considered in monument lighting.
10. Describe the need of aesthetic lighting.

PART B
(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Illustrate with neat diagram the different types of artificial lighting system used. Clearly show the amount of light thrown to up and down direction. Also specify the areas where they are commonly used. (7)
    b) Discuss color rendering and stroboscopic effect. (7)

OR

12. a) Explain glare and its different classifications. (6)
    b) Illustrate the working of fluorescent lamp with a neat diagram. (8)

MODULE II

13. a) Explain the laws of illumination with the help of neat sketches. (7)
    b) Illustrate with a neat diagram the concept of polar curve in illumination technology. (7)

OR

14. a) A room 8m x 12m is illuminated by 26 fluorescent lamps having 40 watts each. The average illumination was found to be 400 lux. Calculate the coefficient of utilisation. Take efficiency of lamps as 70 lumens per watt.   (6)

    b) Explain the working of Goniophotometer.   (8)

MODULE III

15. a) An office 30m×15m is illuminated by twin 40W fluorescent luminaires of lumen output 5600 lumens. The lamps being mounted at a height of 3m from the work place, the average illumination required is 240 lux. Calculate the number of lamps required to be fitted in the office, space assuming the coefficient of utilization to be 0.6 and maintenance factor to be 0.8. Also show the arrangements of lamps.   (8)

    b) Illustrate the fixtures used for interior lighting.   (6)

OR

16. a) Define LOR, ULOR and DLOR.   (6)

    b) The total, upward and downward light output from a luminaire is 1200 lm, 400 lm, 600 lm respectively. Find LOR, ULOR, DLOR and percentage of light energy absorbed in the luminaire.   (8)

MODULE IV

17. a) List and explain various arrangements in street lighting.   (8)

    b) Explain the two basic principles employed in street lighting?   (6)

OR

18. a) A building frontage 50m x 16m is to be illuminated by flood lighting projectors situated 25 meters away. If the illumination is 100 lux, CU=0.5, DF=1.5, WLF= 1.2, estimate the number and size of projectors. Sketch the projectors.   (8)

    b) Explain the classification of projectors in flood lighting according to the beam?   (6)

MODULE V

19. a) Explain the various design criteria of sports lighting.   (8)

    b) Describe the features of auditorium lighting.   (6)

OR

20. a) Explain the classification of lighting controllers.   (6)

    b) Explain the features of lighting used in different areas of a hospital.   (8)

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