

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SIXTH SEMESTER B. TECH DEGREE EXAMINATION(S), DECEMBER 2019**

**Course Code: EE 366**

**Course Name: ILLUMINATION TECHNOLOGY**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

Marks

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|----|---|-----|
| 1. | Explain the quality of a good lighting.   | (5) |
| 2. | Define MHCP and MSCP.   | (5) |
| 3. | List good lighting practices for workplace.   | (5) |
| 4. | Explain the various types of lamps used in street lighting.   | (5) |
| 5. | Define is flood lighting. What are the types of flood lighting?   | (5) |
| 6. | Determine the number of 1000W lamps needed to illuminate the front of a building $50\text{m} \times 16\text{m}$ arranged so that uniform illumination of $90 \text{ lumens/m}^2$ on a surface is obtained. Assuming a luminous efficiency of $17.4 \text{ lumens/watt}$ and a coefficient of utilization of 0.4, depreciation factor = 1.3 and waste light factor = 1.2 | (5) |
| 7. | Describe the features of monument lighting.   | (5) |
| 8. | Explain the need of aesthetic lighting.   | (5) |

**PART B**

*Answer any two full questions, each carries 10 marks.*

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|-----|---|------|
| 9.  | Write short note on i) shadow, ii) glare, iii) Reflection, iv) Colour Rendering, v) Stroboscopic Effect   | (10) |
| 10. | a) What the different schemes of artificial lighting?   | (5)  |
|     | b) State the Laws of Illumination   | (5)  |
| 11. | A drawing hall in an engineering college is to be illuminated with a lighting installation. The hall is $30\text{m} \times 20\text{m} \times 8\text{m}$ (high). The mounting height is 5m and the required level of illumination is $144 \text{ lm/m}^2$ . Using metal filament lamps, estimate the size and number of single lamp luminaries and draw their spacing layout. Assume: Utilization factor = 0.6, MF = 0.75; Space/Height = 1. Lumens/Watt for 300-W lamp = 13, Lumens/Watt for 500-W lamp = 16. | (10) |

**PART C**

*Answer any two full questions, each carries 10 marks.*

12. a) Define Space to Mounting height ratio. (3)
- b) A new uniform lighting system is to be installed in an industrial building. The building measures  $100' \times 150'$ , and has a 21' ceiling. The height of the fixture including the mounting bracket is 3' and the work plane height is also 3', so the distance from the bottom of the fixture is 15'. A zonal cavity method calculation indicates that 41.7 luminaires are required. This number is approximated to 42. Calculate
- i) Spacing,  $S_{\text{approx}}$
  - ii) Approx. no. of fixture per row,  $N_{\text{row}}$
  - iii) Approx. no. of fixture per column,  $N_{\text{col}}$
  - iv) Total no. of fixtures
  - v) Percentage of design illumination
  - vi) Actual fixture spacing in row  $S_{\text{row}}$
  - vii) Actual fixture spacing in column  $S_{\text{col}}$
13. a) Illustrate atleast five fixtures used for outdoor lighting? (5)
- b) Explain the various types of lamps used in street lighting. (5)
14. a) What are the requirements of a good street lighting system? (5)
- b) Explain the constraints in the selection of lamp and luminaire in street lighting. (5)

**PART D**

*Answer any two full questions, each carries 10 marks.*

15. a) How are the projectors in flood lighting classified according to the beam? (4)
- b) Describe the area of application of each type. (6)
16. a) List out any five features of hospital lighting. (5)
- b) Describe any five characteristics of statue lighting. (5)
17. a) Explain Aesthetic Flood Lighting. (3)
- b) List out the requirements of a good Sport lighting. (4)
- c) What are the main features to be considered in auditorium lighting? (3)

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