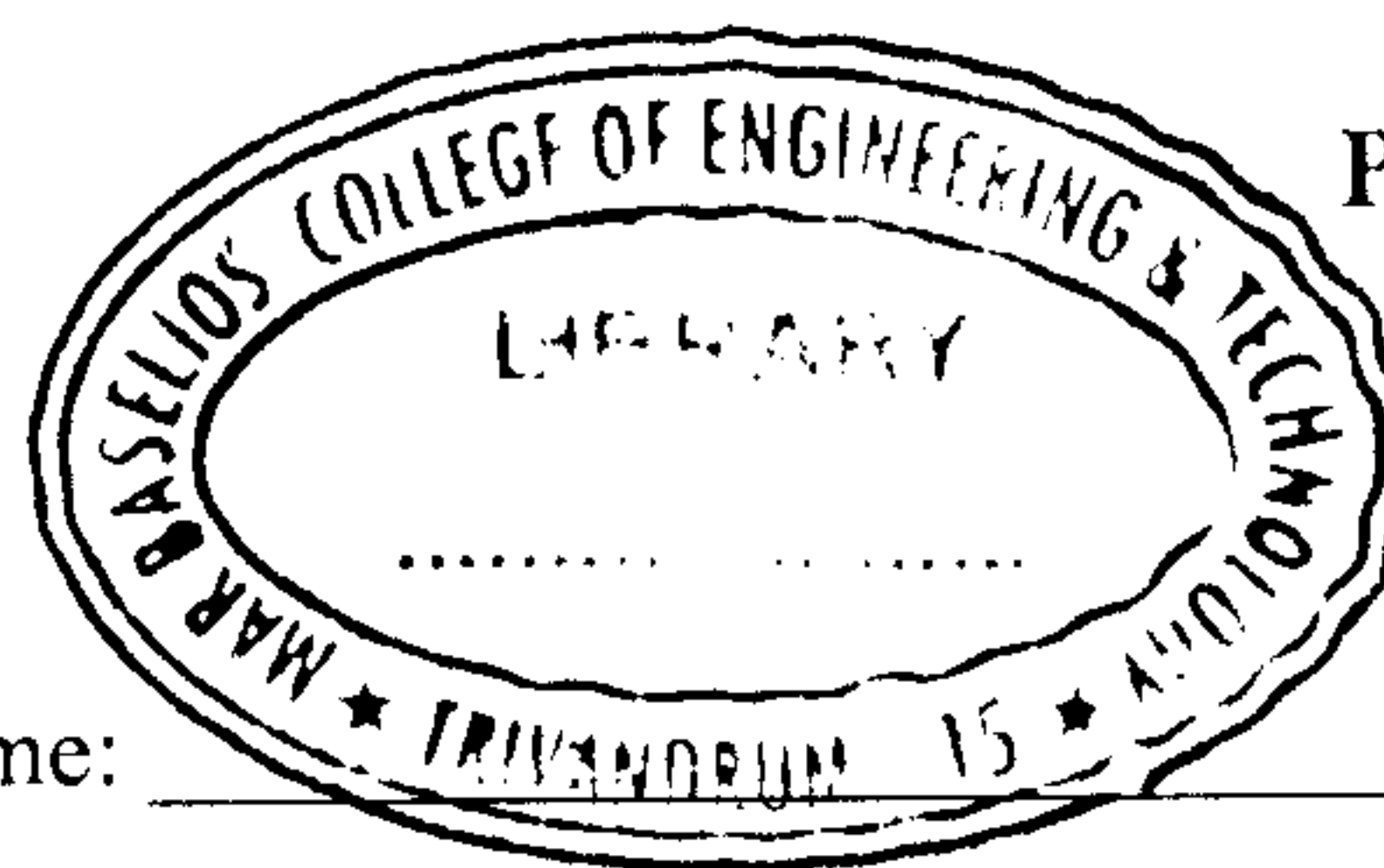


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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B. TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: EE 366

Course Name: ILLUMINATION TECHNOLOGY

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

Marks

- | | | |
|----|--|-----|
| 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 lumens/m^2 on a surface is obtained. Assuming a luminous efficiency of 17.4 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) |

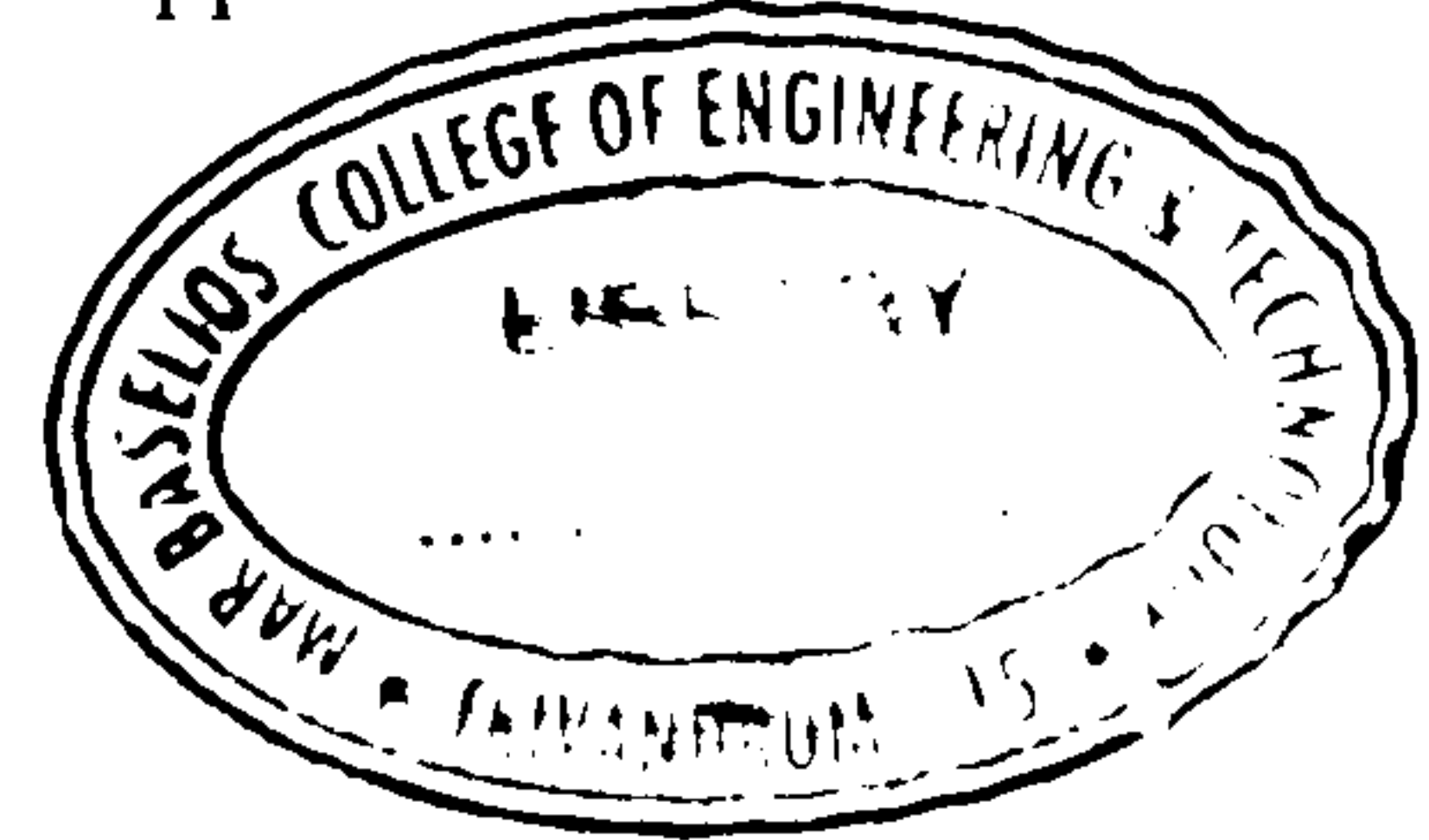
PART B

Answer any two full questions, each carries 10 marks.

- | | | |
|-----|---|------|
| 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 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 (7)
- i) Spacing, S_{approx}
 - ii) Approx. no. of fixture per row, N_{row}
 - iii) Approx. no. of fixture per column, N_{col}
 - iv) Total no. of fixtures
 - v) Percentage of design illumination
 - vi) Actual fixture spacing in row S_{row}
 - vii) Actual fixture spacing in column S_{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)
