

**Course Code: EE366****Course Name: ILLUMINATION TECHNOLOGY**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer all questions, each carries 5 marks.*

Marks

- 1 Write short notes on the stroboscopic effect in lighting system. (5)
- 2 Define the terms a) illumination b) luminous flux c) luminous intensity d) lumen and e) candle power. (5)
- 3 A room 8 m x 12 m is illuminated by 26 fluorescent lamps 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. (5)
- 4 What are the various light arrangement styles in street lighting? (5)
- 5 Explain the main objectives of flood lighting design. (5)
- 6 What is beam spread of flood light luminaire? Explain its significance. (5)
- 7 What are the main features to be considered in monument and statue lighting? (5)
- 8 Explain the constraints in hospital lighting. (5)

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

- 9 a) What are the requirements of a good artificial lighting scheme? (5)  
b) Explain the laws of illumination with the help of neat sketches. (5)
- 10 a) A small light source with intensity uniform in all directions is mounted at a height of 10 m above a horizontal surface. Two points A and B both lie on the surface with point A directly beneath the source. How far is B from A if the illumination at B is only 1/10 as great as at A? (6)  
b) Explain VCP and UGR in connection with glare rating. (4)

- 11 a) What are polar curves? Explain Rouseau diagram and its importance in illumination engineering. (5)
- b) Explain about the necessity of supplementary artificial lighting. (5)

**PART C**

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

- 12 a) An illumination on the working plane of 75 lux is required in a room 72m x 15 m in size. The lamps are required to be hung 4 m above the work bench. Assuming space height ratio of 0.9, utilisation factor of 0.5, a lamp efficiency of 14 lumens per watt and a candle power depreciation of 20 %, estimate the number, rating and disposition of lamps. (6)
- b) Define the terms a) space – height ratio b) maintenance factor (2)
- c) Write the expression to find room index. (2)
- 13 a) Explain lumen or flux method of calculation for interior lighting. (5)
- b) Explain about different types of street lighting luminaire. (5)
- 14 a) Explain the two basic principles employed in street lighting? (5)
- b) What are the requirements of good street lighting? (5)

**PART D**

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

- 15 a) A building measuring 30m x 20m is to be floodlit on the front side with brightness of 25 lumen per sq.m. Coefficient of reflection of building surface is 0.25. Lamps of 500 W having lumens output of 8000 each are used. Assuming beam factor as 0.6, waste light factor be 1.2 and maintenance factor be 0.75, find the number of lamps required. (5)
- b) What are the objectives of aesthetic lighting? (5)
- 16 a) Explain five features of sports lighting. (5)
- b) Write short notes on a) waste light factor and b) beam factor. (5)
- 17 a) Explain different methods available for aiming of lamp in flood lighting. (5)
- b) Explain the design considerations for auditorium lighting. (5)

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