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3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE :

12

- (a) State advantages of good illumination scheme.
- (b) Why LED lamps are becoming more popular, now a days ? Discuss.
- (c) State the purpose of lighting control.
- (d) Explain salt water dimmer.

(B) Attempt any ONE :

6

- (a) Explain construction and working of fluorescent lamp with neat sketch.
- (b) State the features of good illumination scheme (any six).

2. Attempt any TWO :**16**

- (a) Draw and explain how one lamp can be controlled by two switches.
- (b) A room of $30\text{ m} \times 10\text{ m}$ is illuminated by 20 numbers of 200 W lamps. The MSCP of each lamp is 250. If utilization factor is 0.4 and depreciation factor 1.2 then find average illumination produced on the surface.
- (c) A $50\text{ m} \times 15\text{ m}$ of a concrete building is to be illuminated by flood lighting projectors 25 m away. If the required illumination is 100 lux, co-efficient of utilization 0.5, depreciation factor 1.5, waste light factor 1.2. Estimate the number and size of the projector assuming 1000 watts lamps having 17 lumens per watt luminous efficiency. Also calculate the angle of spread.

3. Attempt any FOUR :**16**

- (a) What is flood lighting ? State the purpose of flood lighting.
- (b) Explain lumen or light flux method design technique of interior illumination.
- (c) State the two laws of illumination.
- (d) State any four disadvantages of incandescent lamp and advantages of LED lamps.
- (e) Explain thyristor operated dimmer.

4. (A) Attempt any THREE :**12**

- (a) State the design considerations for interior location of residential unit (any four).
- (b) State the design considerations for interior location of commercial premises (any four).

- (c) Describe 3 point lighting technique used for visual media and still photography.
- (d) Explain direct lighting scheme for illumination.

(B) Attempt any ONE :**6**

- (a) Compare fluorescent lamp and incandescent lamp (any six point).
- (b) Explain Visible light, Ultraviolet light and Infrared light.

5. Attempt any TWO :**16**

- (a) A minimum illumination of 80 lux is required in the room of 50 m × 12 m. Calculate the number, location and wattage of the lamps to be used. Assume that depreciation factor 1.2, utilization factor is 0.4 and efficiency of lamp is 14 lumens/watt.
- (b) State main objectives of street lighting. Explain two general principles employed in the design of street lighting.
- (c) (i) Which lamps are used for malls and supermarkets and why ?
(ii) Explain Agriculture lighting.

6. Attempt any FOUR :**16**

- (a) Explain Railway platform lighting.
- (b) Define the terms related to flood lighting (i) Beam factor (ii) Waste light factor.

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- (c) Give the advantages and disadvantages of high pressure mercury vapour lamp over filament lamp.
 - (d) State different types of lamps used for decorative purpose.
 - (e) State the recommended illumination level required for any four areas of Hospital lighting.
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