

22530

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following :

10

- (a) State any two types of transformer available as a dimmer for illumination control.
- (b) Enlist the two types of arc lamps.
- (c) State any two advantages of LED lamp.
- (d) State any two methods used for light control.
- (e) State the units used for measurement of luminous flux and illumination.
- (f) State the recommended illumination level for (i) Class Room (ii) College Library.
- (g) Name any two types of lamps used in decorative lighting.

2. Attempt any THREE of the following :

12

- (a) State any four desirable characteristics required in Aquarium.
- (b) Explain operation of Auto transformer dimmer with the help of diagram.



- (c) State any four factors to be considered while selecting a lamp for a particular application.
- (d) Compare LED lamp with fluorescent lamp with reference to (i) Life (ii) Running Cost (iii) Luminous efficiency (iv) C.R.I.

3. Attempt any THREE of the following :

12

- (a) Meaning of flood lighting. State the purpose of flood lighting.
- (b) Draw neat circuit diagram of HPMV and label the following components :
 - (i) Main Electrode
 - (ii) Starting Electrode
 - (iii) Outer Glass Tube
 - (iv) Discharge Tube
- (c) State any four design considerations for interior location of residential unit.
- (d) Draw and explain single lamp control by three point and four point method.

4. Attempt any THREE of the following :

12

- (a) Select illumination level required as per ISI for following working plane in residential building (i) kitchen, (ii) living room, (iii) dining room and (iv) study room.
- (b) State the importance of light house based on navigation and safety in the shipyards and state any two types of lamps used in light house.
- (c) LED lamps are becoming more popular, now-a-days. Discuss it based on the (i) Life (ii) Cost (iii) Maintenance (iv) Luminous efficiency.
- (d) Suggest the suitable lighting scheme and lamp for following location in hospital :
 - (i) Reception
 - (ii) Corridors
 - (iii) Patient Wards
 - (iv) Operation Theatres

- (e) State any two lighting schemes with reason used for agricultural and horticultural applications.

5. Attempt any TWO of the following :

12

- (a) State the meaning of Polar curve with suitable diagram. Also give its applications for designing lamps.
- (b) 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 is 1.2, utilization factor is 0.4 and efficiency of lamp is 14 lumens/watt.
- (c) Which type of lamps should be selected for following applications ?
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|----------------------|----------------------|
| (i) Aquariums | (ii) Stage lighting |
| (iii) Flood lighting | (iv) Advertisement |
| (v) Factory lighting | (vi) Street lighting |

6. Attempt any TWO of the following :

12

- (a) Enlist the luminaries used and lux level required in factory lighting for following areas : (i) Office Building (ii) Workshop (iii) Testing Centre (iv) Quality control department (v) Store Room without sunlight (vi) Outdoor Parking Area.
- (b) Illustrate with neat diagram a Staircase wiring and draw the truth table according to position of switch and lamp condition.
- (c) Estimate the number and wattage of lamps which is required to illuminate a workshop space 80 m × 30 m by means of lamps mounted 8.5 m above working plane. The average illumination is 90 lux, co-efficient of utilization is 0.48, luminous efficiency 20 lumens per watt. Assume a space height ratio of unity maintenance factor 0.9.
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