22530

21222

3 Hours / 70 Marks Seat No. | | | | | | | | |

15 minutes extra for each hour

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE : **10**

(a) Define each of following terms of illumination. – lux, lumen, luminous flux, illumination.

(b) Explain concept of photometry.

(c) State any four selection criteria for lamps for different purposes.

(d) Draw a neat labelled diagram of Sodium Vapour Lamp.

(e) Draw a neat circuit diagram of resistance type salt water Dimmer.

(f) State basic working principle of Dimmer.

(g) Name any two Lamps used for indoor games.

2. Attempt any THREE : **12**

(a) Compare Mercury Vapour lamp and Sodium Vapour lamp on the basis of :

(i) Life (ii) Luminous efficiency (iii) Starting time (iv) Light output (colour)

(b) Describe working principle of Auto Transformer Dimmer with a neat sketch.

(c) Elaborate the points of selection of Luminairies for interior lighting.

(d) State any four general requirements of outdoor lighting.

3. Attempt any THREE : **12**

(a) Draw a single line diagram showing lighting distribution of scheme of factory lighting.

(b) State illumination level required as per ISI for following working plane : (i) Bed room (ii) Bathroom (iii) Bathroom mirror (iv) Study room

(c) Explain with a neat sketch working of (i) Resistance type Dimmer (ii) Salt water dimmer

(d) Describe working of glass envelope type neon lamp with neat sketch.

4. Attempt any THREE : **12**

(a) State any advantages and applications of mercury iodide lamp.

(b) Draw control circuit for :

(i) One lamp controlled from one point

(ii) Two lamps controlled by 2 switches.

(c) State the general requirements for the lighting for the Interior Location of commercial premises.

(d) State any four general requirements for Aquarium lighting.

5. Attempt any TWO : **12**

(a) A hall of 80 × 40 m^2 with ceiling height of 5.2 m. is to be provided with general illumination of 150 lumens / square metre. Assuming coefficient of utilisation of 0.6 and depreciation factor of 1.35 determine number of fluorescent tubes required; the distance between them, mounting height, total wattage. The luminous efficiency of fluorescent tube is 35 lumens per watt for 40 watt tube light.

(b) State and explain :

(i) Law of Inverse Square

(ii) Lambert Cosine Law

(c) State importance of light house in shipyards and state different types of lamps used for light houses.

6. Attempt any TWO : **12**

(a) State the meaning of flood lighting and illustrate different types of flood light projectors.

(b) State any four general requirements for hospital lighting and Lux level requirement for the following places :

(i) Operation theatre

(ii) General ward

(c) A uniform illumination of 200 lux is to be obtained on the floor of room measuring 20 m × 20 m by arranging electric light suitably. Calculate number of Lamps & Wattage of each lamp, if lamp efficiency is 20 Lumen / Watt. Assume and write suitable value of constant for this calculation.

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