22530

11920

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

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.

(5) Write any special instructions if any. Preferably write the answers in sequential order.

Marks

1. Attempt any FIVE of the following : **10**

(a) Define Enhance lighting.

(b) Compare the salient features of LED and CFL based on

(i) Lamp efficiency

(ii) Life span

(c) Define the terms incandescent and incandescent lamp.

(d) State two types of electronic dimmer.

(e) State the first law of illumination.

(f) State the Lux Level recommended for (1) Class Room (2) College Auditorium.

(g) State any two type of lamps used in Horticulture.

2. Attempt any THREE of the following : **12**

(a) Explain the features of Aquarium lighting.

(b) Illustrate with neat wiring diagram a single lamp control by two point method.

(c) Explain the working of HPMV Lamp with neat diagram.

(d) Compare the AC and DC Arc lamps.

3. Attempt any THREE of the following : **12**

(a) Explain the working of Neon sign tube with diagram.

(b) State the selection criterion of the lamp for various purposes.

(c) State any four design considerations for illumination scheme of commercial complex.

(d) Describe the working principle of Thyristor operated dimmer with the help of circuit diagram.

4. Attempt any THREE of the following : **12**

(a) Select the illumination level required as per ISI for following working plane in residential building :

(i) Kitchen sink

(ii) Staircase

(iii) Dining room

(iv) Study room

(b) Explain the lighting scheme to be designed for each of the following :

(i) Special ward in hospitals

(ii) Dentist's cabin

(c) Analyse the effect of supply voltage on performance of LED, as regards current, Lumen output, efficacy and life.

(d) State the purpose of light control. List the different types of dimmer.

(e) State the different types of outdoor flood lighting and where are they used ?

5. Attempt any TWO of the following : **12**

(a) State the various lighting calculations method and describe any one of them.

(b) A workshop measures 10 m × 25 m. The shop is illuminated by 24 lamps of 200 watts each. The lumen efficiency of each lamp is 15 lumens per watt. Depreciation factor is assumed to be 0.8 and a co-efficient of utilisation 0.5. Determine the illumination on the working plane.

(c) State the requirements of illumination scheme of shipyard.

6. Attempt any TWO of the following : **12**

(a) Enlist the luminaries used in factory lighting and lux level required in various areas.

(b) Describe control of a single lamp from three places. Draw the relevant circuit diagram.

(c) A drawing hall 30 metres by 15 metres with a ceiling height of 5 metres is to be provided with a general illumination of 120 lumens per metres square ; taking a co-efficient of utilization of 0.5 and depreciation factor of 1.4. Determine the number of fluorescent tubes required, their spacing, mounting height and total wattage. Take luminous efficiency of fluorescent tube as 40 lumens per watt for 80 watt tubes.
