22530

22232

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

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

(a) State the purpose of lighting control. **2**

(b) Compare filament lamp and fluorescent lamp on the basis of following : **2**

(i) Quality of light

(ii) Life of lamp

(c) State any two advantages of LED lamp. **2**

(d) State different types of electric dimmer. **2**

(e) State the applications of polar curve. **2**

(f) State the recommended illumination level for : **2**

(i) Stair (ii) Study room

(g) Name any two lamps used for aquariums. **2**

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

(a) State any four characteristics of flood lighting. **4**

(b) Explain the working of salt water dimmer with the help of diagram. **4**

(c) Explain with neat sketch construction and working of fluorescent lamp. **4**

(d) State the factors to be considered while selecting a lamp for a particular application. **4**

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

(a) Explain the lightening schemes provided in stage lighting. **4**

(b) Explain working of sodium vapour lamp. **4**

(c) State any four benefits of good industrial lighting. **4**

(d) Draw and explain how one lamp can be controlled by two switch. **4**

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

(a) State illumination level in lux as per ISI for residential purposes in following places : **4**

(i) bedroom (ii) living room

(iii) kitchen (iv) dressing table

(b) State which type of lamps should be selected for following applications : **4**

(i) stage lighting (ii) flood lighting

(iii) advertisement (iv) street lighting

(c) Explain with neat sketch working of Metal Halides lamp with its applications. **4**

(d) Explain with circuit diagram the working of Triac operated dimmer. **4**

(e) State the requirement of illumination scheme for shipyard. **4**

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

(a) Define : **6**

(i) Mean spherical candle power

(ii) Space to height ratio

(iii) Luminous efficiency

(b) A room of 20 m × 10 m is illuminated by 20 numbers of 200 W lamps. The MSCP of each lamp is 240. If utilization factor is 0.65 and the depreciation factor is 1.25, then find average illumination produced on the floor. **6**

(c) Explain how lightening scheme should be designed for each of the following : **6**

(i) Operation theatre in hospital,

(ii) general ward in hospital.

Suggest the lamps for above locations.

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

(a) State the requirement of illumination scheme for (i) sport lighting (ii) railway lighting and suggest the lamps for above locations. **6**

(b) Draw control circuit for – **6**

(i) single lamp control by two point method

(ii) single lamp control by three point method

(iii) single lamp control by four point method

(c) A hall of 12 m × 16 m is to be illuminated to 150 lumen per sq. meter on working plane. If utilization factor is 0.6 and depreciation factor is 0.8 and source gives an output 40 lumen per watt, determine number of lamps. **6**

———————