22530

23242

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) Draw a neat circuit diagram of a SCR operated dimmer.

(b) State the purpose of outer and inner tubes in construction of H.P.M.V. lamps.

(c) Give any two advantages of halogen lamps over incandescent lamps.

(d) State any two purposes of lighting control.

(e) Write the applications of polar curve in the design of lamp.

(f) State the IS recommended illumination level for (i) Corridor (ii) Living room.

(g) State any two requirements for Aquarium lighting.

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

(a) Explain the lighting used for decorative purposes.

(b) Write the types of transformer dimmer. Explain any two of them.

(c) Explain the working of fluorescent tube lamp with the help of neat sketch.

(d) Compare the salient features of HID & LED lamps.

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

(a) Explain the latest technologies in street lighting.

(b) Explain the working principle of Arc lamp.

(c) Describe any two illumination schemes adopted in commercial units with neat sketch.

(d) State different methods of light controls. Also explain the importance of light control.

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

(a) Explain any four factors to be considered when choosing a light source.

(b) Explain three point lighting used in video films.

(c) State any four factors to be considered while designing illumination for industrial premises.

(d) Draw the neat diagram of :

(i) Resistance dimmer

(ii) Saltwater dimmer used to control brightness level of a bulb.

(e) Explain the significance of lighting in advertisement.

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

(a) Explain lighting calculation of an interior location by watt/m^2 method.

(b) A workshop spaced 60 m × 15 m is illuminated by using 12 number of lamps widthwise and 3 number of lamps lengthwise. Assume each lamp is of 100 watts and having luminous efficiency of 16 lumens/watt. Also assume coefficient of illumination as 0.6 and depreciation factor as 20%. Calculate the lux level in the workshop.

(c) State and explain the types of projectors used in flood lighting.

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

(a) Explain the factors to be considered for Railway lighting.

(b) Draw and explain the control of lamp by (i) Single switch (ii) Two switches.

(c) An interior of area 72 m × 15 m is to be illuminated with 150 lux. The lamps are to be mounted 4 m above the working plane. Assume a space height ratio of 1 : 1, utilisation factor of 0.6, depreciation factor of 20% and lamp efficiency of 14 lumens/watt, estimate the number of lamps and their rating.
