17639

15162

3 Hours / 100 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) Use of Non-Programmable Electronic Pocket Calculator is permissible.

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

Marks

1. (A) Attempt any THREE of the following : **12**

(a) State and explain Lambert's cosine law of illumination.

(b) Explain construction of metal halide lamp with sketch.

(c) List the different dimmers used in illumination control. Explain the operation of any one type.

(d) A hall of 40 ft by 50 ft is to be illuminated to 45 lumen per sq. ft. on working plane. If utilization factor is 0.6 and depreciation factor is 0.8 and source gives an output 10 lumen per watt. Determine the number of lamp.

(B) Attempt any ONE of the following : **6**

(a) Compare filament lamp and fluorescent lamp on the basis of following :

(i) quality of light

(ii) capital and running cost

(iii) lamp efficiency

(iv) life of lamp

(v) voltage regulation

(vi) lumen output

(b) Explain general rule; general principles; design considerations and types of lamps for street lighting.

P.T.O.

2. Attempt any TWO of the following : **16**

(a) (i) Explain the stepwise procedure for designing illumination scheme for residential unit.

(ii) State the four advantages of good illumination scheme.

(b) 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 m^2; taking a coefficient 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.

(c) (i) Explain stage lighting for Auditorium.

(ii) State the lamps used for Agriculture and Horticulture.

3. Attempt any FOUR of the following : **16**

(a) Define the following terms :

(i) Luminous flux

(ii) Utilization factor

(iii) Mean Spherical Candle Power (MSCP)

(iv) Lamp efficiency

(b) Distinguish between direct lighting and indirect lighting (any four point).

(c) Explain TRIAC operated dimmer for light control.

(d) State the requirements of illumination scheme for a shipyard.

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

4. (A) Attempt any THREE of the following : **12**

(a) Draw and explain construction of mercury vapour lamp.

(b) Explain meaning and applications of polar curves for designing the lamps.

(c) State general requirements of factory lighting.

(d) Explain design considerations for sports ground lighting.

(B) Attempt any ONE of the following : **6**

(a) State and explain any six factors while considering the designing the illumination for interior location of commercial.

(b) Explain the following related to illumination control :

(i) Control of enhancing lighting

(ii) ON/OFF control & Dimming control

5. Attempt any TWO of the following : **16**

(a) (i) State the recommended illumination level required for any four areas of hospital lighting.

(ii) List the various indoor lighting schemes and explain any one of them with sketch.

(b) (i) Explain lighting for advertisement.

(ii) Explain different types of reflectors which are used for enhancing interior illumination.

(c) (i) Explain electric dimmer transformer and their types used for illumination control.

(ii) List the different medical lamps used in various sections of hospitals.

6. Attempt any FOUR of the following : 16

(a) Explain construction and operation of lamp used for railway platform lighting.

(b) Explain any four factors that govern the design considerations for industrial premises.

(c) What is flood lighting ? State various purposes of flood lighting.

(d) State the recommended illumination level required for any four area of residential premises.

(e) Explain the importance of mounting height and spacing of luminaries while designing the lighting scheme for outdoor application.