11819

3 Hours / 100 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. (A) Attempt any THREE : **4 × 3 = 12**

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

(b) Draw neat circuit diagram at tungsten filament bulb and give names for diff. parts.

(c) Explain working principle of thyristor control dimmer in electric dimmer system.

(d) State any six factors on which efficiency of lighting depends.

(B) Attempt any ONE : **6 × 1 = 6**

(a) Explain with neat circuit diagram, low pressure mercury vapour lamp.

(b) Define each of following terms of illumination – Space height ratio, Reduction factor, maintenance factor.

2. Attempt any TWO : **8 × 2 = 16**

(a) Draw and explain how one lamp can be controlled by two switch. State application of it.

(b) A uniform illumination of 80 lux obtained on the floor of room measuring 15 m × 15 m by arranging electric light suitably. Calculate the no. of lamps and watt rating of each lamp if lamp is 15 lux/watt. Assume and write suitable values required in this calculation.

(c) A room 30 m × 20 m is illuminated 20 no. of 200 W lamps. The MSCP of each lamp is 240. If utilization factor is 0.75 and 1.25 depreciation factor, then find out average illumination produced on floor.

3. Attempt any FOUR : **4 × 4 = 16**

(a) State any four characteristics of flood lighting.

(b) State illumination in lux for each of following :

Operation theatre, stair, living room, study room.

(c) Explain with neat diagram construction and working of HPMV.

(d) A 230 V lamp has a total flux of 2800 lumens and takes current 0.7 Amp. Calculate lumen per watt and MSCP per watt.

(e) Explain working of salt water dimmer with the help of diagram.

(f) What is polar curve ? Write its use in designing of lamps.

4. (A) Attempt any THREE : **4 × 3 = 12**

(a) State any four specific requirements of street lighting.

(b) Compare commercial lighting and Industrial lighting. (any four point)

(c) State any four types of lighting schemes. State their one use.

(d) State any four applications of spot lighting.

(B) Attempt any ONE : **6 × 1 = 6**

(a) Explain with neat diagram, construction and working of Halogen lamp. State their application.

(b) Explain lumen or light flux method for calculation of light.

5. Attempt any TWO : **8 × 2 = 16**

(a) Estimate the number and wattage of lamps which is required to illuminate a workshop space 80 m × 30 m by means of lamps mounted 8.5 m above working plane. The average illumination is 90 lux, coefficient of utilization is 0.48, luminous efficiency 20 lumens per watt. Assume a space height ratio of unity maintenance factor 0.9.

(b) Explain how lighting scheme should be designed of each of the following parking area in mall and digital showroom and Garment shop.

(c) A minimum illumination of 80 lux/m^2 is required in factory shade 80 m × 20 m. Calculate no. location and wattage of the units to be assume that depreciation factor 0.8, coefficient of utilization is 0.6 and efficiency lamp unit is 14 lumen/watt.

6. Attempt any FOUR : **4 × 4 = 16**

(a) State any four requirements of illumination of shipgards areas.

(b) State any four desirable characteristics of lighting required in stage area.

(c) State any four desirable characteristics required in Aquarium.

(d) How decorative lighting is useful for advertising section ?

(e) Suggest the various illumination levels required in various areas of Healthcare centre and Hospitals.

(f) Write a note on Horticulture lighting and Agriculture lighting.
