9090

21011

3 Hours / 80 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) 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.

(7) Use of Steam tables, logarithmic, Moiler's chart is permitted.

(8) Preferably write the answers in sequential order.

Marks

1. a) Attempt any <u>FOUR</u> of the following : **8**

(i) Give the units of solid angle and illuminations.

(ii) What is meant by stroboscopic effect ?

(iii) Draw neat schematic of Neon Lamp.

(iv) Define :

(1) Luminous efficiency

(2) Luminance

(v) Give the law of inverse square.

Marks

b) Attempt any <u>TWO</u> of the following : **8**

(i) What are the important aspects to be considered while planning a lighting installation. Give any four of them.

(ii) What is meant by a glow starter switch ? Where it finds its application ?

(iii) An incandescent lamp rated 230V tubes 2.2 A and emits 6000 lumen. Calculate the efficiency in

(1) MSEP per watt

(2) Lumen/watt

2. Attempt any <u>TWO</u> of the following : **12**

a) Describe the working of a sodium vapour lamp with a neat sketch. Explain the relevant features.

b) Discuss in detail the essential features of illumination when used for advertisement and hoardings.

c) Clearly give the design procedure for the illumination of a commercial premises. Write all the relevant formulae.

3. Attempt any <u>THREE</u> of the following : **12**

a) Draw the control circuit to explain how a single lamp is controlled by means of two switches.

b) Explain about electronic dimmer in detail with necessary sketch and circuit diagram.

c) Draw polar curve and horizontal polar curve and explain their significances.

d) State the laws of illuminators

Marks

4. Attempt any <u>TWO</u> of the following : **16**

a) An office room measuring 43m × 18m requires an illumination of 165 lux. Calculate the number of lamps needed assuming a coefficient of utilisation of 0.6 and depreciation factor of 1.2. State the assumptions made. Draw the lighting scheme.

b) What is a dimmer transformer ? What is its use ? Explain any one of its type in detail with respect to construction, operation and application.

c) Design a lighting scheme for a drawing office with dimensions 16m × 8m × 6m with ceiling white in colour and walls painted light cream and without beam on the ceiling, windows down each long side and horizontal drawing boards arranged with natural lighting from left hand.

5. Attempt any <u>TWO</u> of the following : **12**

a) Name any four lighting accessories and give their significances.

b) Discuss all relevant features of flood lighting.

c) Write about the method of arrangement of measuring the level of illumination emitted by a source of light.

6. Attempt any <u>THREE</u> of the following : **12**

a) The candle power of a lamp is 80. A plane surface is placed at a distance of 2.5m from this lamp. Calculate the illuminations on the surface when it is

(i) normal

(ii) inclined to 45 degrees.

Marks

b) Enumerate the important features to be kept in mind while designing illumination for an aquarium.

c) A car parking area (50m × 100m) is to illuminated for an average illumination of 10 Lux. Design the lighting scheme using mercury lamp.

d) (i) Write any four advantages of CFL lamp over ARC lamp.

(ii) State the principle of street lighting.