Sample Test Paper - I

Course Name : Diploma in Electrical Engineering

Course Code : EE

Semester   : Sixth

Subject Code   : Illumination Engineering

Marks   : 25   **Time:1 Hour**

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. Preferably, write the answers in sequential order.

Q1. Attempt any THREE   **9 Marks**

   a) Define the following terms –Illumination, Lumen and Lux.

   b) State any three advantages of CFL lamps?

   c) State the different source of light?

   d) State inverse square law for illumination?

Q2. Attempt any TWO   **8 Marks**

   a) Study the given figure and answer the following questions.

       (i) Name the part a

       (ii) Name the part b.

       (iii)Describe the working of lamp?

carbon arc lamp
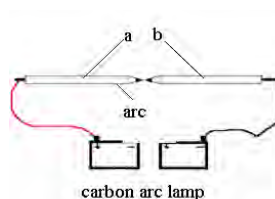
   b) Describe the construction of mercury vapour lamp with the help of diagram?

   c) Describe working principle and operation of Resistance Type Dimmer?

Q3. Attempt any TWO   **8 Marks**

   a) State, why tungsten is selected as the filament material? State the factors on which life of filament   depends?

   b) What is polar curve? Describe how will you use polar curve for lamp design?

   c) A small assembly shop 14m long, 7m wide and 3m up ceiling is to be illuminated to level of 300 lux. The utilization and maintenance factor are 0.64 and 0.7 respectively calculate the number of lamps required to illuminate whole area if the lumen output of the lamp selected is 2800 lumen.

Sample Test Paper - II

Course Name : Diploma in Electrical Engineering

Course Code : EE

17639

Semester   : Sixth

Subject Code   : Illumination Engineering

Marks   : 25   **Time:1 Hour**

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. Preferably, write the answers in sequential order.

Q1. Attempt any THREE   **9 Marks**

a) State the illumination level in Lux as per Indian standard for the following places of residential unit.

   (i)   Living room

   (ii) Dining room

   (iii) Kitchen.

b) Name the different principles usually employed in the design of street lighting installation

c) Name the lamp suitable for following places in Hospital.

   (i)   Operation Table

   (ii)   Operation theatre (general)

   (iii) Internal Roads

d) State the meaning of floodlighting? Where it is used?

Q2. Attempt any TWO   **8 Marks**

a) Describe the specular reflection principle of street lighting with the help of diagram.

b) What is the reason for using Metal Halide Lamp in sport lighting?

c) Front portion of a building 100m x 32m is illuminate by sixteen 2000 watt lamps arranged so that uniform illumination on the surface is obtained. Assume Luminous efficiency of is 17.4 Lumen / watt , coefficient of utilization of 0.4, depreciation factor 1.3 and waste light factor of 1.2, determine illumination on the surface.

Q3. Attempt any ONE   **8 Marks**

a) A minimum illumination of 90 Lumen/m^2 is required in a factory shed of 100m x 10m calculate the number of location and wattage of lamp to be used. Assume that the maintenance factor

0.9, coefficient of utilization is 0.5 and efficiency of the lamp is 50 Lumen/watt. Draw the disposition of lamps.

b) The following table gives the watts and lumen

Watts	500	1000	1500	2000
Lumen	9000	18000	27000	36000

The front of the building measuring 60m and 15m is to be floodlighted by means of projector placed at a distance of 8m from the wall. The average illumination required is 60 Lux. Determine the number and size of projector required. Assume waste light factor at of 1.8 depreciation factor 0.9 and coefficient of utilization 0.6.

Sample Question Paper

Course Name : Diploma in Electrical Engineering

Course Code : EE

17639

Semester   : Sixth

Subject Code   : Illumination Engineering

Marks   : 100   Time: 3 Hours

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. Preferably, write the answers in sequential order.

Q1. (A) Attempt any THREE   **12 Marks**

  a) State any four advantages of good illumination scheme

  b) State any two advantages and disadvantages of incandescent lamp

  c) State application of the following:

   (i)   Resistance type dimmer

   (ii)   Salt water dimmer

   (iii) Auto transformer dimmer

   (iv) Two winding transformer dimmer

  d) State the purpose of lightning control? Which device is used for this purpose?

Q1. (B) Attempt any ONE   **06 Marks**

  a) Compare tungsten filament lamp and fluorescent lamp on the basis of following.

   (i)   Voltage regulation

   (ii)   Brightness

   (iii) Luminous efficiency

   (iv) Lumen Output

   (v)   Initial cost

   (vi) Stroboscopic effect

  b) Define the following terms-

   (i)   Space height ratio

   (ii)   Utilization factor

   (iii) Reduction factor

Q2. Attempt any TWO   **16 Marks**

    a) Describe different methods used for lighting control as energy saving tool.

    b) A Drawing hall of 60m x 15m is to be illuminated with 500 lux. The lamps are required to be hanging 3 meter above the workbench. Assume a utilization factor of 0.6, lamp efficiency 30 lumen/watt and Candle power depreciation of 20%. Estimate number and rating of lamp. Assume suitable space height ratio, Draw plan showing location of lamps use IS symbol.

    c) A 50m x 15m of a concrete building in an industrial town is to be illuminated by floodlighting projectors 25m away. If the required illumination is 100 lux, coefficient of utilization 0.5, depreciation factor 1.5, waste light factor 1.2. Estimate the number and size of the projector assuming 1000 watts lamps having 17 lumens/ watt luminous efficiency. Also calculate the angle of spread.

Q3. Attempt any FOUR   **16 Marks**

    a) State the meaning of following terms related to street lighting.

        (i) Span

        (ii) Spacing

        (iii)Mounting height

        (iv)Width of Carrageway

    b) Describe the following design consideration of a good lighting scheme

        (i) Selection of luminaries

        (ii) Size of room

    c) State and describe laws of illumination with figure

    d) Describe Direct and Indirect scheme for illumination

    e) Describe working principle and construction of thyristor operated dimmer with diagram

Q4. (A) Attempt any THREE   **12 Marks**

    a) State general illumination level in lux as per Indian Standard for following places at sports unit

        (i)   Badminton

        (ii)   Table Tennis

        (iii)   Volley Ball

        (iv)   Basket Ball

    b) Describe the stepwise procedure for designing illumination scheme for residential unit.

c) Which type of lamp used for fresh water aquarium and why?

d) Describe working principle and construction of neon lamp with the help of diagram.

Q4. (B) Attempt any ONE   **06 Marks**

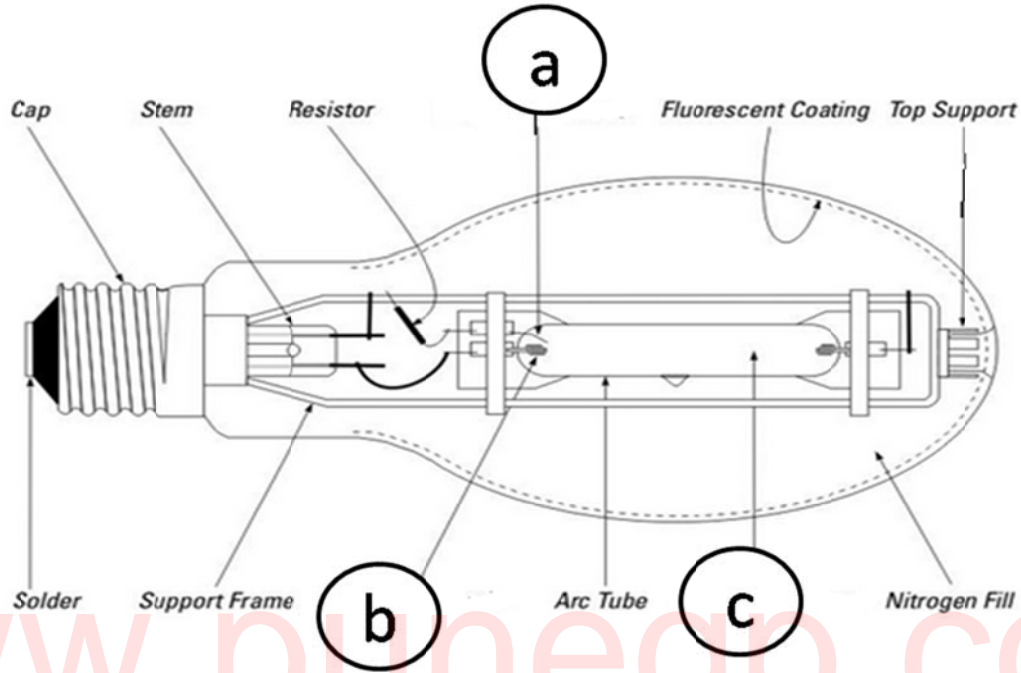a) Study the given figure 1 and Answer the following questions.

Figure 1

    (i)   Identify type of the lamp.
    (ii)   Name the part **a**
    (iii)   State the function of part **b**
    (iv)   State the function of part **c**
    (v)   State the purpose of fluorescent coating.
    (vi)   State, why the cap of lamp is having threaded shape?

b) Which type of light source used for following application
    (i)   Advertisement
    (ii)   Floodlighting
    (iii)   Street lighting
    (iv)   Decorative lighting
    (v)   Railway platform lighting
    (vi)   Hospital

Q5. Attempt any TWO   **16 Marks**

a) A minimum illumination of 80 lumen/meter^2 is required in the factory shade of 50m x 12m. Calculate the number, location, and wattage of the units to be used.

Assume that depreciation factor 0.8, coefficient of utilization is 0.4 and efficiency of lamp units is 14 lumens/watt.

b) What are the various arrangements of locating lamps on roads? Describe with the help of sketch.

c) State and describe general requirement for illumination of horticulture.

Q6. Attempt any FOUR   **16 Marks**

a) Describe the following terms related to flood lighting.

    (i)   Beam factor

    (ii)   Waste light factor

b) Describe the following fundamental lighting criteria that have to be considered when designing sports lighting installations.

    (i)   Types of lamps

    (ii)   Type of Luminaire

c) In a street lighting scheme lamps with 600 cd are hanged at height of 6 meter the distance between the posts is 12 meter, determine illumination under lamps and at the midpoint between the posts.

d) "Decorative lighting is increasingly planned at the very initial stage of a project." Justify the statement

e) State the criteria for preferring tungsten filament lamp on operation table in hospital.