BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – Dip.EE-2022
Course Name – Illumination Engineering
Course Code - DEEPE503A
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) The illumination is directly proportional to the cosine of the angle made by the normal to the illuminated surface with the direction of the incident flux. Choose the law for this statement

a) Planck's law b) Macbeth's law of illumination
c) Bunsen's law of illumination d) Lambert's cosine law.

(ii) Select from the following why in a mercury vapor lamp light red objects appear black.

a) high wavelength of red objects b) color mixing
c) absence of red light from lamp radiation d) absorption of red light by the lamp radiation.

(iii) Examine why an object which appears red to the eyes

a) green radiations b) blue radiations
c) violet radiations d) all of the above.

(iv) The color of light determine by

a) wavelength b) frequency
c) wavelength and frequency d) wavelength, frequency speed and intensity.

(v) Predict the capacitor is used in auto transformer circuit of a sodium vapour lamp in order to

a) Regulate discharge voltage b) Improve the circuit power factor
c) Control lamp illumination level d) Protect the lamp against overvoltage

(vi) Identify the unit of illumination

a) lux b) decibel
c) henry d) ampere

(vii) In neon signs, predict argon gas is used for

a) Yellow color
b) Blue color
c) Red color
d) Green color

(viii) Select the frequency of flickers in a incandescent lamp at 220 V, 50 Hz supply.

a) 25 per second
b) 50 per second
c) 100 per second
d) 220 per second

(ix) Select from the following combination of gas is filled in the lamp and the resulting color is incorrect

a) Neon-red
b) Nitrogen-blue
c) Carbon dioxide – daylight white
d) Magnesium-white

(x) Choose the application does not need ultra-violet lamps

a) Medical purposes
b) Aircraft cockpit dashboard lighting
c) Car lighting
d) Blueprint machines

(xi) Select the lamp is also known as quick start or "instant start" fluorescent tube:

a) Sodium vapor lamp
b) Startless fluorescent lamp
c) Mercury vapor lamp
d) Neon Lamp

(xii) Select that the sensors in the eye arc known as

a) rods and cones
b) wires and nerves
c) retina and antenna
d) high and low

(xiii) Report which of the following is present inside the fluorescent tube?

a) mercury vapor
b) argon and neon
c) helium
d) hydrogen

(xiv) Select the purpose of coating the fluorescent tube

a) To improve its life
b) To improve the appearance
c) To change the colour of light emitted to white
d) To increase the light radiations due to secondary emissions

(xv) Identify the function of a reflector is to

a) Protect the lamp
b) Provide better illumination
c) Avoid glare
d) All of the above

Group-B

(Short Answer Type Questions) 3 x 5=15

2. State the uses of polar curves. (3)
3. Define the following terms: candle power, luminous intensity, illumination. (3)
4. Explain the concept of "dark sky lighting" and its importance in exterior lighting design. (3)
5. Explain photometry and photometer. (3)
6. Illustrate the difference between illumination and luminous intensity. (3)

OR

Establish a relation between plain angle and solid angle. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Explain the basic nature of light. (5)
8. Analyze the advantages and disadvantages of using LED lighting in an interior design project compared to traditional incandescent lighting. (5)
9. Explain how you plan to create special lighting effects and draw attention to focal points in the lobby, such as a grand chandelier, decorative screens, or a water feature. What techniques will (5)

you use to highlight these elements?

10. Compare different lighting scheme in brief. (5)
11. Represent the laws of illumination. (5)
12. Explain about the application of colorimetery. (5)

OR

Explain the importance of providing inclusive and equitable lighting solutions for the community. (5)

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