	Utech
Name:	
Roll No.:	In Owner sty Knowledge Stad Excellent
Invigilator's Signature:	

# CS/BOPTM/SEM-3/BO-302/2012-13 2012

# **LIGHTING & THE EYE**

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

### **GROUP - A**

## ( Multiple Choice Type Questions )

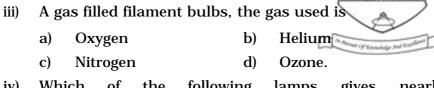
1. Choose the correct alternatives for the following:

 $10 \times 1 = 10$ 

- i) Human eye is most sensitive to wavelength of
  - a) red region
  - b) yellow-green region
  - c) ultraviolet region
  - d) equally to all wavelengths.
- ii) To describe the colour of daylight
  - a) CT is used
  - b) CCT is used
  - c) CFI is used
  - d) daylight factor is used.

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- iv) Which of the following lamps gives nearly monochromatic light ?
  - a) Sodium vapour lamp
  - b) GLS lamp
  - c) Tube light
  - d) Mercury vapour lamp.
- v) Photometer Measures
  - a) Luminous Flux
  - b) Luminous Intensity
  - c) Intensity of Illumination
  - d) Brightness.
- vi) The unit of luminous flux is
  - a) steradian
- b) candela

c) lumen

- d) lux.
- vii) A mercury vapour lamp gives
  - a) Pink light
- b) Yellow light
- c) Greenish blue light
- d) White light.
- viii) One lumen per square metre is the same as
  - a) one lux
- b) one candela
- c) one foot candle
- d) one lumen metre.
- ix) Visible range of electromagnetic radiation is between
  - a) 380 780 mm
- b)  $380 780 \mu m$
- c) 4000 Å 10000 Å
- d) 400 7000 nm.
- x) CFL Stands for
  - a) Carbon Filament lamp
  - b) Compact Filament lamp
  - c) Carbon Fluorescent lamp
  - d) Compact Fluorescent lamp.

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#### **GROUP - B**

### (Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$ 

2. a) What is CIE?

1

b) What do you mean by CIE standard observer?

1

- c) Draw the visibility curve of a standard observer for photopic and scotopic vision.
- 3. Draw the photopic and scotopic curve of human eye. Compare between photopic and scotopic vision.
- 4. Define luminous intensity and its unit.
- 5. Write one application of each of the following lamps:

CFL, Mercury lamp, Halogen lamp, Incandescent lamp.

## **GROUP - C**

## (Long Answer Type Questions)

Answer any *three* of the following.

 $3 \times 15 = 45$ 

- 6. a) Discuss on Lux meter sensor.
  - b) What is meant by the 'linearily of response' of this sensor?
  - c) Why is colour correction and cosine correction necessary for a Lux meter sensor?
  - d) Briefly discuss on Isolux diagram.
  - e) What do you mean by Purkinje effect?

3 + 2 + 4 + 3 + 3

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- 7. Describe different types of glare and their significance in everyday life. How they may be reduced in practice ? 7 + 8
- a) Write *one* use of each of the following :
  Sodium lamp, Mercury lamp, Halogen lamp, Incandescent lamp.
  - b) What is daylight? What are its components?
  - c) Write a short description on Eye Protectors.

$$(4 \times 1) + (2 + 2) + 7$$

- 9. a) What are the lamp selection parameters?
  - b) Discuss the necessity of a SPD curve.
  - c) What is colour rendering index (CRI)?
  - d) What do you mean by correlated colour temperature ( CCT ) ?
  - e) For a lamp with CRI 80% and CCT 6500 K what is the statement? 3 + 2 + 3 + 3 + 4
- 10. With labeled diagram write the construction and working of LB photometer. 4 + 6 + 5

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