

M.TECH ILLUMINATION TECH. AND DESIGN SECOND YEAR SECOND SEMESTER – 2024

SUBJECT: - LIGHTING & BIOLOGICAL FACTORS

Time: Three hours

Full Marks: 100
(50 marks for this part)

Use Separate Answer scripts for each part, Answer any *five questions* 2

PART- I

1. (a) What is Macular Degeneration? Where is the place of occurrence? How it can be initially detected? How the light energy can be employed to block the same? 8
(b) What is Glaucoma? 2
2. (a) What is Photokeratitis & Erythema? 3
(b) Give some examples of optical radiation exposures. 7
3. (a) What is Light Pollution? 1
(b) Categorize various forms of Light Pollution created by the ill design of the lighting system. 6
(c) Describe the consequences of Light Pollution. 3
4. Discuss the laws related to optical radiation. 10
5. (a) How important is the cornea to good vision? 4
(b) Briefly describe the process of visual sensation. 6
6. (a) What is Stroboscopic Effect? Describe briefly various processes for reducing the Stroboscopic Effect. 5
(b) What is Visual Threshold? 2
(c) What is Mesopic Vision? 2
(d) Discuss the Blocks Law. 1
7. (a) What is Active Absorption & Passive Absorption related to optical radiation? 3
(b) Briefly describe about the Sun Lamp. 4
(c) What is Actinic Dose? What Wavelengths are actinic? 3

[Turn over

[2]

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PART- I

8. Write short notes on any two:

2

- (a) Aberrations
- (b) Hypermetropia
- (c) Astigmatism

M.TECH ILLUMINATION TECH & DESIGN ENGG. SEM. EXAMINATION, 2024
(2nd year, 4th Semester)

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Time: Three hours

Full Marks 100
(50 marks for this part)

Use a separate Answer-Script for each part

| No. of Questions | PART - II Answer question Number-1 and any four from the rest | Marks |
|------------------|---|-------|
| 1. a) | Define Optical Radiation. | 2 |
| b) | What is Phase Shift? | 2 |
| c) | What is SAD? | 2 |
| d) | What is Insect Trap? | 2 |
| e) | Define Circadian system. | 2 |
| 2. | <hr/> Explain different type of light and their influence on plant growth. Why blue and red light is most effective for growth of plant? | 6+4 |
| 3. | <hr/> How Artificial light sources affects moods in terms of biological factors? Why UV-C is most effective in human being as well as atmosphere? | 6+4 |
| 4. | <hr/> Explain Biological effect of laser radiations. What is Decoy Lamp and how it works? | 5+5 |
| Continued2 | | |

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(50 marks for this part)

Use a separate Answer-Script for each part

| No. of Questions | PART - II | Marks |
|------------------|--|-------|
| 5. | How UV radiation effects on microorganism? Explain Symptom of SAD? How light therapy can reduce the bad effect of SAD? | 4+4+2 |
| 6. | What is photo axis? How light influence on insects' behavior & development? | 2+8 |
| 7. | Short notes on (any two): a) Blue Light b) Germicidal UV Lamp, c) Shift work disorder & Zetlag disorder d) Infant Jaundice | 5+5 |