

M.Tech. ILLUMINATION TECH. & DESIGN FIRST SEMESTER EXAM. 2024

TIME: 3 HOUR

FULL MARKS: 100

SUBJECT: OUTDOOR & LANDSCAPE LIGHTING

PART-I (50 Marks)

(Use Separate Answer script for each part)

Q.1. Write short notes on (Any 5)

(2x5) = 10

- (i) Cross Lighting
- (ii) Bollard Lights
- (iii) Accent Lighting
- (iv) Grazing in Outdoor Lighting
- (v) Silhouetting
- (vi) Nocturnal Vision
- (vii) Shadowing

ANSWER ANY 4 (4X10)

Q.2. How does the act of human perception physically function on Landscape Lighting?

10

Q.3. What is the purpose of Outdoor Lighting? Describe 5 types of Outdoor Lights.

10

Q.4. Explain Different functional use of a particular space (of your choice) by using different type of lights (suitable sketches preferred).

10

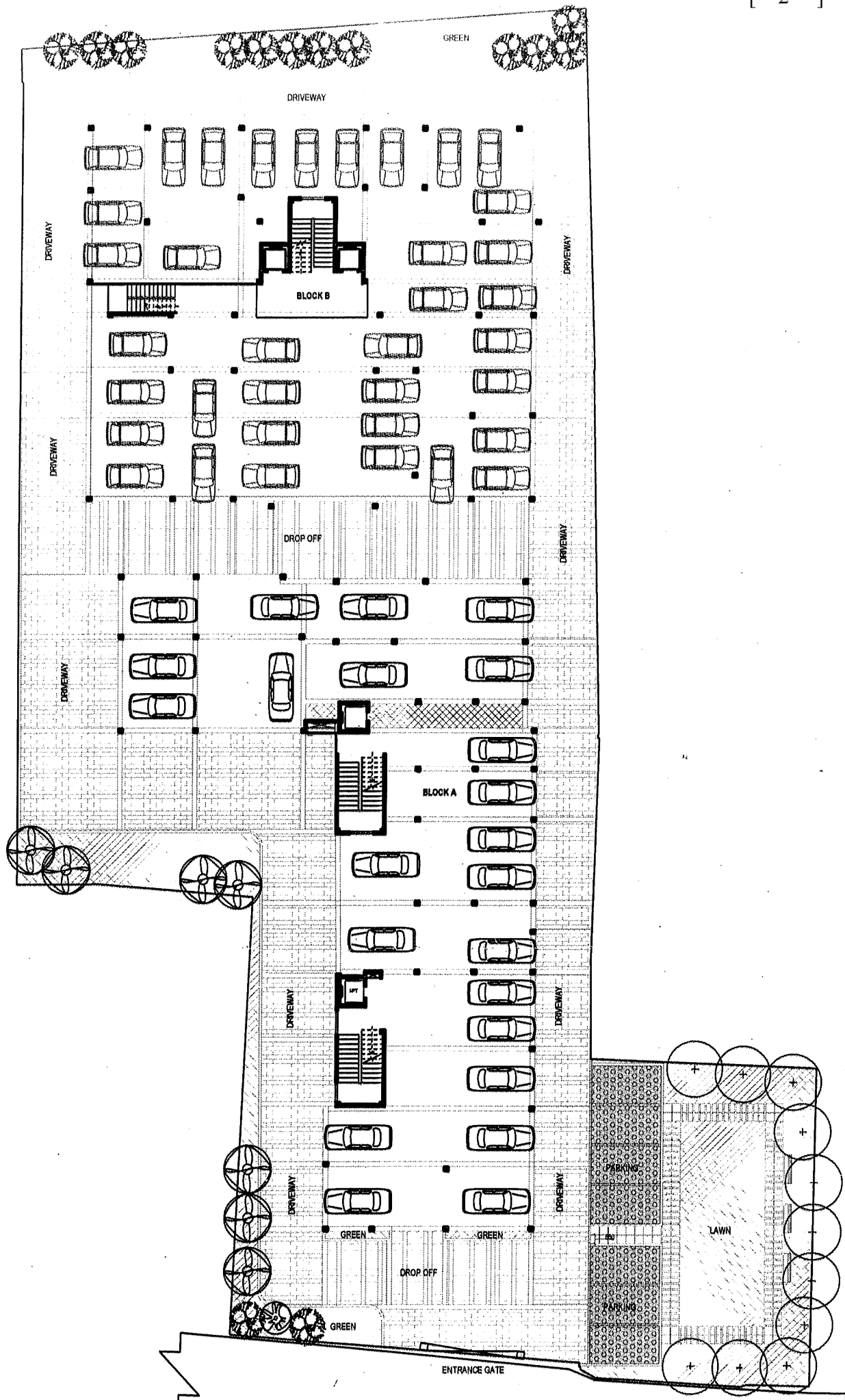
Q. 5. Please explain the objectives of outdoor lighting? What is the main Principles of Landscape Lighting?

10

Q.6. For an Outdoor Landscape area as shown in the figure below, ^(attached) explain the Lighting concept, types of fixtures and wattage you would propose.

10

[Turn over



M.TECH ILLUMINATION TECH. AND DESIGN

OUTDOOR & LANDSCAPE LIGHTING (PART – I)

SECOND YEAR FIRST SEMESTER EXAM 2024

Ref. No.: PG/IlluTD/T/132A

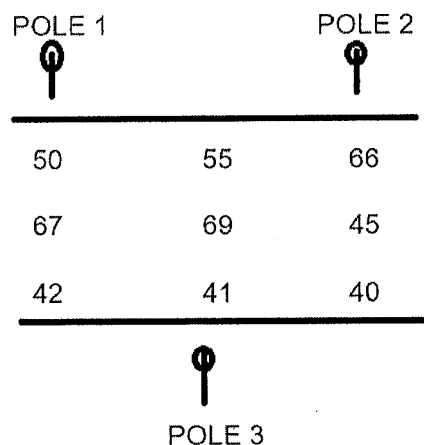
A. Answer any 5 (Five) questions

5X1= 5

1. What is the road lighting Indian Standard?
2. For Camera broadcasting, which illuminance parameter is the major factor?
3. As per Indian Standard, what is the average illuminance for A1 type road?
4. What is the grid size in metre for the design of outdoor sports lighting?
5. In Sports lighting, what is the angle required for head frame tilting in Highmast to avoid Light Pollution and Glare?
6. In Sports lighting, as per FIFA guideline what is the max. Permissible tilt angle of luminaire?
7. What is the relation between Floodlight Beam angle and Average Horizontal Illuminance?

B. Answer any 3 (Three) questions

1.



Here in the diagram, As per IS-1944 what type of pole arrangement is described? Calculate the Average Illuminance and Uniformity as per 9 Point Method. Discuss about the fulfilment of parameters as per IS- 1944. Also discuss the fulfilment of parameters as per IRC-SP-84.

2+5+3+3+2=15

2. Write down definition with diagram.

- a. Carriageway
- b. Outreach
- c. Overhang
- d. Kerb
- e. Shoulder

3+3+3+3+3

3. Discuss about the different type of distribution in Road Lighting Luminaire.

15

4. Discuss about Discomfort Glare and Disability Glare in Road Lighting. What do you understand Surround Ratio in Road Lighting. 5+5+5

5. Derive the equation for Point Specific Illuminance with Diagram. From there discuss about Throw angle and Spread Angle of Luminaire. 5+3+2

As per IS-1944, Discuss about different types of Pole Arrangement with diagram. 5

6. As per FIFA Class A type competition, Write down the below values:

- | | | |
|---------------------------|--------------------------|------------------------------|
| i. Horizontal Illuminance | ii. Vertical Illuminance | iii. Horizontal and Vertical |
| Uniformity | iv. Flicker Factor | v. CRI |
| vii. Glare | viii. Light Loss Factor | vi. CCT |

2+3+2+2+1+1+1+1

What do you mean by Infield and Outfield of Cricket Field. Write down the recommended Average Horizontal Illuminance as per ICC Guidelines. 2

7. Discuss about the different areas of Tunnel Lighting. Also mention the required lighting parameters as per CIE 88. 10

Discuss about the NEMA Classification of Spots Lighting. 5