

B.Architecture Examination 2019
[4th Year 2nd Semester]
Subject: Service and Equipment-III

Time: 3 hours

Use Separate Answer script for each part

Full Marks:100
(50 Marks for each part)

Part-I

ANSWER Q. No. 1 AND ANY TWO QUESTIONS

Q.1.

A) What do you understand by the followings-

i) visible band of electromagnetic radiation; ii) UV and IR radiation; iii) visual size of an object and iv) contrast.

B) Define the following terms with corresponding SI Unit

i) Luminous Efficacy; ii) Luminous Exitance ; iii) Luminance; iv) Illuminance.

C) Draw typical spectral power distribution curve for a (i) warm white LED lamp and (ii) cool white LED lamp. Explain their differences.

8+8+4=20

Q.2.

A) State and explain Inverse square cosine law of illuminance with suitable diagram.

B) A light source having luminous intensity $I_v = 200 * (1 + \cos \gamma)$ cd is suspended over a floor at a height of 2m. Calculate the horizontal illuminance at a grid point directly below the source. What would be the above values if the grid point is shifted 2m from the first one on the same horizontal surface?

C) How Lighting Power Density is calculated for an indoor lighting installation?

4+6+5=15

Q.3.

A) Compare the luminous efficacy between the followings-

(i) 36W T8 driven by electronic ballast(4W) emits 2450 lumens and 22W WLED driven by driver(2W) emits 2520 lumens.

(ii) 250W high pressure sodium vapor lamp, driven by magnetic ballast(40W), emits 27000 lumens and 400W metal halide lamp, driven by magnetic ballast(50W), emits 34000 lumens.

B) Explain Correlated Color Temperature (CCT) and Colour rendering index of lamps used for functional applications.

7+8=15

Q.4.

A) Explain the followings –

(i) discomfort glare and disability glare;

(ii) direct glare and reflected glare.

B) How discomfort glare in indoor lighting system is evaluated?

10+5=15

Q5.

A) Write down the Lumen formula to estimate the quantity of luminaires of an indoor general lighting scheme.

B) Propose a general lighting scheme for an office room (6m x 5m x 4m) with luminaire layout using the given data and estimate LPD -

Luminaire – 32W WLED downlight; Dimension 0.25m x 0.25m; 2560 Lumen;

Surface reflectances – 70%; 65%; 15%;

Horizontal working plane at height of 1.0m above floor;

Maintained $E_{avg} \geq 500$ Lux; Coefficient of utilization = 0.55; Maintenance factor=0.75.

5+10=15

NAME OF THE EXAMINATION: B. ARCHITECTURE 4TH YR 2ND SEM. EXAM.-2019

SUBJECT: SERVICE AND EQUIPMENT – III

TIME: THREE HOURS

FULL MARKS: 100

PART – II

Answer Question 1 and any two questions.

1. Write short notes on any six **3X6 = 18**
- i) Load Factor and Power Factor
 - ii) Surge Arrestor
 - iii) Distribution transformer
 - iv) Cable laying in trench
 - v) Stranding of conductors
 - vi) Area of Collection of Lightning of a building
 - vii) Batten Wiring
 - viii) MCB AND RCCB
 - ix) Plate Earthing
2. a) Describe the type of damages caused by direct and indirect effects of lightning. **8**
- b) Describe two methods followed for protection of buildings against lightning. **8**
3. a) 'Earthing in electrical system is a must' –justify. **5**
- b) Describe TT and TN-C type System Earthing. **6**
- c) Describe Loop-in wiring with drawing. **5**
4. a) Describe (i) Casing & Capping wiring and (ii) Conduit wiring. **10**
- b) 'Atmospheric Conditions and Reliability of Power Supply are two major considerations for planning of electrification of a housing complex' – Explain. **6**