Ref.No. EX/ARCH/T/424/2017(OLD)

B.Architecture Examination 2017(Old)

[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 ANY THREE QUESTIONS

Question No. 5 carries 18 marks

Q.1.

A) Explain the process of the conversion of electromagnetic radiation to light with block diagram.

B) Human vision is known as trichromatic vision – explain.

C) Write down the relation between –

i) Luminous intensity and Luminous flux

ii) Illuminance and Luminous flux

iii) Luminance and Luminous intensity

(4+4+8=16)

Q.2.

A) Write down inverse square cosine law of illuminance and explain with suitable diagram.

B) A light source having luminous intensity $I_\gamma = 500 * (1 + 2 * \cos\gamma)$ cd is suspended over a horizontal surface at a height of 2m. Calculate illuminance at a point directly below the source and at two other points situated at distance of 0.5m and 1m from the first point.
Comment on the light distribution pattern of the source.

(6+10=16)

Q.3.

A) Draw CIE 1931 Chromaticity diagram and discuss the process of finding out source chromaticity from its spectral power distribution data.

B) Write down the steps of computation of CCT of a light source by Mac Camy algorithm.

(8+8=16)

Q.4.

A) Explain the physical process of white (both cool white and warm white) light generation from - (i) fluorescent lamp and (ii) light emitting diode. Draw their typical SPD diagram.

B) What the advantages of electronic ballast over the magnetic ballast required to drive fluorescent lamps?

C) List the electrical and photometric specifications of electric lamp.

(8+4+4=16)

Q5.

A) Write down the use of the following equipment-
(i) Luxmeter; (ii) Integrating sphere; (iii) Mirror-Gonio photometer and (iv) Luminance meter.

B) Explain the concept of daylight integrated artificial lighting system and mention its advantages.

C) Daylight is dynamic in nature –explain.

D) Explain the concept of energy efficient lighting system.

E) How lighting power density is estimated for indoor lighting system? Give one example.

F) What information are available from IS:3646, NLC-2010 and ECBC-2007 related to indoor lighting system design?

(6x3=18)

EX/ARCH/T/424/76/2017 (Old)

NAME OF THE EXAMINATION: B. E. ARCHITECTURE FOURTH YR SECOND SEMESTER (Old)-2017

SUBJECT: SERVICE AND EQUIPMENT – III TIME: THREE HOURS FULL MARKS: 100

PART – B

Answer Question 1 and any two questions.

1. Write short notes on any six 3X6 = 18

   i) Load Factor, with an example

   ii) Air Gap Surge Arrestor

   iii) Lightning Conductor with meshed cage

   iv) Safety Aspects in Electrical Installation

   v) Cable laying

   vi) Lightning Flash Density and its utilisation

   vii) Batten Wiring

   viii) Energy Meter and ELCB

   ix) Circuit Breaker and Switchgear

2. a) Describe the direct and indirect effects of lightning. 8

   b) What are the Weighting Factors A, B, C, D and E -- considered for deciding whether protection against lightning to any building is required? 8

3. a) Describe Pipe Earthing with diagram? 6

   b) Describe TT and TN-S methods of electrical system earthing. 10

4. a) How estimation of load demand in a housing complex is made? 6

   b) What are the different power supply procedures as per Regulation / norms of the power supply company, for different ranges of load demand in a housing complex? 10