

**B. ARCH. FOURTH YEAR SECOND SEMESTER – 2022**  
**SERVICES & EQUIPMENT – III (Arch/T/424)**

Time 3 hrs

Full Marks: 100

**Part I** (Each part carrying 50 marks)  
**Answer any five questions**

Q1.

- A. Mention different types of filaments lamps. Explain the procedures considered to improve performances of filament lamps. [2+4]  
B. Which type of light source is preferred for better colour rendering and why? [2+2]

Q2.

- A. Write down the differences between incandescence and fluorescence. [3]  
B. What do you mean by HID light source? Where those are used? [3]  
C. Mention the basic requirements of Luminaires [4]

Q3.

- A. Mention different types of fixtures based on their mounting locations. [4]  
B. Write a short note on different lighting system possible for indoor application. [4]  
C. What do you mean by a Recessed luminaire [2]

Q4.

- A. Mention additive & Subtractive primary colours. [2]  
B. A room of 12m X 12m dimension required to be uniformly illuminated with average illumination level of 80 lux. Consider maintenance factor to be 0.8 and Coefficient of utilization of 0.5, lamp efficiency 14.75 lumen/Watt. Find required number of Light sources and required spacing arrangements for their mounting. [8]

Q5.

- A. Mention working principle of a fluorescent lamp. [4]  
B. A 5 meter wide circular track of outer diameter 50 meter is illuminated by a centrally placed luminaire emitting 10000 candela in all directions towards the track. If mounting height is 50 meter, calculate average illuminance on the track. [6]

Q6.

- A. Write a short note on chromaticity diagram. [4]  
B. Calculate illuminance at a point 5 feet below the centre of an 8 foot fluorescent luminaire with intensities as given below. [6]

Angle	Intensity (cd)	Angle	Intensity (cd)
0	4000	20	3679
2.5	3989	22.5	3592
5	3975	25	3496
7.5	3951	27.5	3398
10	3913	30	3292
2.5	3863	32.5	3169
15	3812	35	3045
17.5	3745		

**EX/ARCH/T/421/2022**

**NAME OF THE EXAMINATION: B. ARCHITECTURE 4TH YR 2ND SEM.  
EXAM.-2022**

**SUBJECT: SERVICES AND EQUIPMENT – III  
FULL MARKS: 100**

**TIME: THREE HOURS**

**PART – II**

**Answer Question 1 and any two other questions.**

1. Write short notes on any six **3X6 = 18**
  - i) Load Factor
  - ii) TT Earthing System
  - iii) Lightning Conductor
  - iv) Safety Aspects in Electrical Installation
  - v) MCB and Energy Meter
  - vi) Area of Collection of Lightning
  - vii) Batten Wiring
  - viii) Distribution Board
  - ix) Plate Earthing
  
2. a) Describe the direct and indirect effects of lightning. **8**  
b) Describe Conduit Wiring Procedure. What are its merits and demerits? **8**
  
3. a) Why earthing is necessary? **6**  
b) Describe Pipe Earthing with diagram. **10**
  
4. a) Assessment of load demand in new premises is necessary— explain. What are the three important considerations for estimation of load demand? **10**  
b) Describe any two of the following: **6**
  - I. Transformer
  - II. Conductor
  - III. Cable
  - IV. Circuit Breaker