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Fifth Semester B.Arch. Degree Examination, Dec.2023/Jan.2024
Building Services – II

Time: 3 hrs.   Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Assume suitable data wherever necessary.
3. Draw appropriate sketches to support your answers wherever necessary.

Module-1

1   Write short notes on:
a.   Maximum Demand Load   (05 Marks)
b.   Demand Factor   (05 Marks)
c.   NBC - 2016 requirements for substation location and other requirements for substation.
(10 Marks)

OR

2   Describe the various stages of transmission and distribution of electrical energy in India. Elaborate on various components involved in the system with sketches.   (20 Marks)

Module-2

3   Make a Single Line Diagram (SLD) or Schematic Flow Diagram to indicate the distribution of electricity inside a bulk residential project with atleast 20 numbers 2 BHK typical apartments. The SLD should indicate the various types of equipments, panels, cables and protective devices required for the system.   (20 Marks)

OR

4   What are the various strategies that can be utilized to design a Net Zero Energy Building project? Explain in details with sketches and associated numeric data about energy utilization.   (20 Marks)

Module-3

5   Write short notes on:
a.   Miniature Circuit Breaker (MCB)
b.   Earth Leakage Circuit Breaker (ELCB)
c.   Protection Relays
d.   Difference between MCB and MCCB   (20 Marks)

OR

6   a.   Why is Earthing System required in a building?   (05 Marks)
b.   Elaborate on the techniques used for designing Lightening Protection System (LPS) for buildings, with sketches.   (15 Marks)

Module-4

7   Write short notes on:
a.   LED lamps   (05 Marks)
b.   Factors determining the required LUX levels in a built space   (05 Marks)
c.   Laws of illumination   (10 Marks)

OR

8 a. Describe the various lighting methods and the types of luminaries that can be used to achieve these lighting layers with the help of diagrams. (10 Marks)
   b. Elaborate the parameters to keep in mind while designing the lighting for:
       (i)   Building Façade
       (ii) Landscaped Area (10 Marks)

Module-5

9 Write short notes on:
   a. CCTV system
   b. LAN system
   c. Building Management System
   d. Audio Visual System (20 Marks)

OR

10 Draw a electrical and lighting layout for a 2 BHK apartment using the IS code symbols. Provide legend for the symbols, control lines, quantities table and calculation for the connected load and demand load for this apartment. Use the following data for calculation:
   (i)   Lamps - 60 W
   (ii)   Fans - 60 W
   (iii) Kitchen Chimney Exhaust - 1500 W
   (iv)   6A socket - 100 W, unless actual value of load is specified
   (v)   16A socket - 1000 W, unless actual value of loads is specified
   (vi)   Exhaust fans - 60 W
   (vii) Geyser (storage type) - 2000 W
   (viii) Computer point – 150 W
   (ix)   Laptop - 50 W
   (x)   Printer, inkjet - 70 W
   (xi)   Iron box - 1000 W
   (xii) Refrigerator - 800 W
   (xiii) T.V. - 80 W
   (xiv) Mixer grinder - 1000 W
   (xv)   Air conditioner - 1250 W
   (xvi) Washing machine - 800 W
   Any data that has not been provided can be assumed appropriately and mentioned in the solution. (20 Marks)

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