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Fifth Semester B.Arch. Degree Examination, Jan./Feb.2021
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 data where necessary and mention the same.

Module-1

1   a.   Write short notes on:
        (i)   Current
        (ii)   Load factor.
        (iii) Transformers.   **(12 Marks)**
   b.   Briefly discuss the various classifications of power distribution systems.   **(08 Marks)**

OR

2   a.   Discuss the importance and application of electrical services in building industry. **(05 Marks)**
   b.   Explain with neat sketches, the means of electricity distribution from an electric sub-station to a residence.   **(15 Marks)**

Module-2

3   a.   List out the possible incoming power resources for a residence.   **(05 Marks)**
   b.   Mention the different types of wiring systems. Also explain the conduit system with its advantages and disadvantages.   **(15 Marks)**

OR

4   a.   Write short notes on :
        (i)   Renewable energy.
        (ii)   Circuits and short circuits.   **(10 Marks)**
   b.   What are "Net Zero" buildings? Discuss the different ways "Net zero" is defined.   **(10 Marks)**

Module-3

5   a.   Discuss the need for earthing/grounding. List out the steps required to complete earthing mechanism for a residence in an urban scenario.   **(10 Marks)**
   b.   Mention the advantages and applications of fuses and circuit breakers.   **(10 Marks)**

OR

6   a.   List out the different ways of lightning protection systems. Explain with neat sketches, the lightning protection system for large buildings in remote locations.   **(10 Marks)**
   b.   Mentioning the ways circuit breakers are designed, briefly discuss the various types of the same.   **(10 Marks)**

Module-4

7   a.   Define and briefly explain with sketches:
        (i)   Illuminance and luminous flux.
        (ii)   Lambert's cosine law.   **(10 Marks)**
   b.   Discuss the different types of lighting design with examples and sketches.   **(10 Marks)**

OR

8   A tailoring factory of size $9 \times 15 \times 4$ M needs to be illuminated to an illuminance level of 550 LUX at the bench level. Assume an appropriate height of the bench, and the luminaries to be 40 W fluorescent tube of 1200 mm wide, hanging from the ceiling with an initial output of 3000 lumens. Use the table below for determining the UF for reflection coefficients being C : 0.5, W : 0.5, F:0.2 and MF = 0.8.

Find out the number of luminaries required and prepare the layout for the same.

Room Reflection Coefficient	Room Index				
C,W, F	1.00	1.25	1.50	2.00	2.50
0.5, 0.5, 0.2	0.44	0.49	0.52	0.57	0.6

(20 Marks)

Module-5

9   a.   Point out the relevance and importance of Extra Low Voltage systems that need to be integrated as part of electrical design.   (12 Marks)

   b.   List out the notations that are used to depict in an electrical layout. Also write about the different heights at which you will provide the various electrical points.   (08 Marks)

OR

10   For a typical Bedroom of 4×5 M with its attached Toilet of 1.5×2.7M , show the necessary furniture and make an electrical layout for the same. Assume the clear height of the ceiling as 3.0 M. Also make a table to show the heights of all the electrical points shown. (20 Marks)