CBCS SCHEME

USN

21ARC44

Fourth Semester B.Arch. Degree Examination, Dec.2025/Jan.2026
Building Services – II

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. List and describe any four Indian Codes or Standards that are applicable to electrical services in buildings. **(08 Marks)**

b. What are the roles of the State Electricity Board and the Chief Electrical Inspectorate in electrical services approval and compliance? **(06 Marks)**

c. How do these standards and authorities influence the design and execution of electrical systems in a building? Provide atleast two examples. **(06 Marks)**

OR

2 a. Explain the concept of ecological imbalance and how conventional electricity generation contributes to it. **(05 Marks)**

b. List and explain any three green technologies used for electricity generation in buildings. **(09 Marks)**

c. What are the design and implementation challenges when integrating green power into conventional electrical systems of buildings? Provide two challenges with solutions. **(06 Marks)**

Module-2

3 Explain the internal electrical distribution system of a high-rise commercial building with reference to all major components involved. **(20 Marks)**

OR

4 Explain how renewable energy systems can be integrated into the electrical design of a Net Zero Energy Building and discuss the role of energy conservation and thermal load reduction in achieving net zero status. **(20 Marks)**

Module-3

5 a. Explain the working principle, applications and differences among MCB's, ELCB's, MCCB's and ACB's. **(16 Marks)**

b. Describe the role and importance of protection relays in an electrical system. **(04 Marks)**

OR

6 a. Describe in detail the purpose and types of earthing systems used in buildings. What factors influence the selection for an earthing system? **(12 Marks)**

b. Explain the design considerations of a lighting protection system as per NBC and relevant standards. **(08 Marks)**

Module-4

7 a. Describe the various types of lamps used in building lighting systems, discussing their efficiency and sustainability. **(12 Marks)**

b. Explain the main lighting techniques and discuss the integration of daylight with artificial lighting in energy-efficient design. **(08 Marks)**

OR

8 Explain the principles of lighting design. Describe high energy and low energy lighting systems and discuss the role of control systems in improving lighting efficiency and reducing energy consumption **(20 Marks)**

Module-5

9 Explain the key components and requirements of extra low voltage systems in residential or apartment buildings. **(20 Marks)**

OR

10 Describe the process of residential electrical layout design and explain how electrical load estimation is carried out complying with local building codes. **(20 Marks)**

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