QP Code:CE2T03-2 **(Pages: 3)**

Reg No : ..... Name : .....

MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM

(Govt. Aided Autonomous Institution)

Third Semester B.Tech. Degree (SAY) Examination, February, 2026

Course Code: B24CE2T03

Course Name: FUNCTIONAL PLANNING OF BUILDINGS

Max. Marks: 100 Duration:3 Hours

PART - A: 30 Marks (10 Qns x 3 Marks)

Answer all questions

1. List different materials that can be used to improve the thermal efficiency of a building envelope.
2. List different ways by which flexibility can be achieved in a building design.
3. Explain skylights and light shelves in the context of natural lighting and describe how each contributes to improve illumination in a building's interior.
4. Define building acoustics and identify key applications of acoustics and sound insulation in building design.
5. Identify the minimum open space requirement around a high-rise building as per KBR.
6. Mention the minimum clearance required from overhead electric lines for a building.
7. Illustrate three standard electrical wiring symbols used in building layout diagrams and state their meanings.
8. Write a brief note on the purpose and characteristics of a fire lift.
9. Give two examples of innovative functional concepts used in sustainable buildings.
10. Mention two design issues commonly faced in implementing a Building Automation System.

PART - B: 70 Marks (5 Qns x 14 Marks)

Answer any One full question from each module

Module 1

11. (a) Explain the elements of aesthetics. (7 marks)
    (b) Discuss the role of proportion and patterns in achieving aesthetic unity with examples. (7 marks)

OR

12. (a) Explain the significance of site selection in building planning and list the key physical conditions to evaluate. (7 marks)

(b) Discuss how social, community factors and approaches to the site can influence the design of a residential complex. (7 marks)

Module 2

13. a) Outline the essential functional requirements for designing an effective ventilation system. (7 marks)

b) Elucidate the different types of mechanical ventilation systems and their operational principles. (7 marks)

OR

14. Elucidate the methods used to achieve thermal comfort in buildings.

Module 3

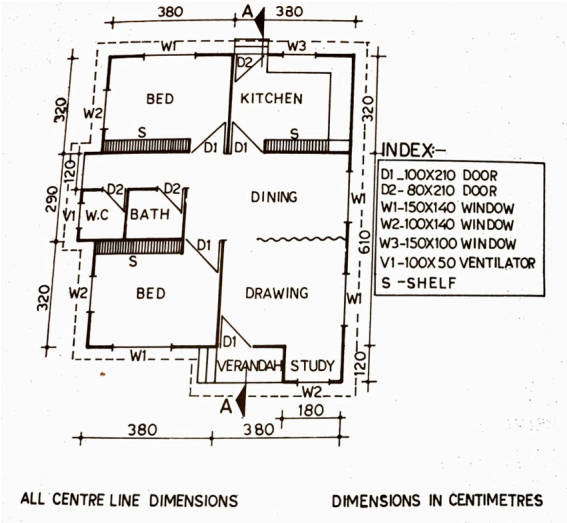
15. Line sketch of a building is given below. Draw to a suitable scale (a) Plan (b) Section.

FOUNDATION: - Random rubble masonry in cement mortar (c.m) 1:6, 60 cm wide and 90 cm deep over a levelling course of plain cement concrete (P.C.C.) 1:4:8 mix, 10 cm thick.

BASEMENT: - Brick masonry in c.m. 1:6, 45 cm wide and 45 cm above G. L.

WALL: -Brick masonry in c.m. 1:6, 20 cm thick, Reinforced cement concrete (R. C. C.) lintels 20 cm x 20 cm are to be provided over the doors, windows and ventilators.

ROOF: - The R.C. C. roof slab is at a height of 300 cm above the floor level. Roof slabs are to be projected by 30 cm all around, beyond the outer wall face. A parapet wall of brick in c.m 1:5, 60 cm high is to be provided all around the roof.



OR

16. (a) Identify the key differences between Group G1 and Group H buildings in terms of their functional requirements as per NBC. (7 marks)

(b) Suggest how the NBC guidelines can be applied to plan the layout of a small industrial unit effectively. (7 marks)

Module 4

17. a) Describe the various types of elevators and their applications in building design. (7 marks)

b) Assess the different types of escalators and their suitability for various environments. (7 marks)

OR

18. a) Elucidate the key principles for designing an effective house drainage system. (7 marks)

b) Define the antisiphonage pipe, illustrating its function with a clear diagram. (7 marks)

Module 5

19. Select any one case study of a green and intelligent building. Describe the intelligent features and sustainable practices incorporated in your case study building and explain their benefits.

OR

20. Discuss in detail the importance of energy-efficient equipment in green buildings. How does their selection impact the overall sustainability of a building project? Provide examples.

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