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Question Paper Code : 12288

M.E./M.Tech. DEGREE EXAMINATIONS, JANUARY 2022.

Elective

Structural Engineering

ST 4004 – PREFABRICATED STRUCTURES

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Explain in detail disuniting of prefabricates elements.
2. List out the forces Induced during the transportation of precast elements.
3. Distinguish between one way and two way prefabricated slabs.
4. List the materials used for connection in precast elements.
5. Give the maximum allowable deflection limit for roof slabs under short term loads.
6. Explain the codal recommendations for reinforcement in joints with their requirements.
7. Discuss the factors associated with curtain walls.
8. Give the short note on sandwich wall panel.
9. List out the instability failure modes for prefabricated concrete shell structures.
10. Draw the neat sketches of different types of roof truss in industrial buildings.

PART B — (5 × 13 = 65 marks)

11. (a) Discuss in detail the specific requirements for planning and layout of prefabrication plant.

Or

- (b) Explain the need of modular coordination and standardization of prefabricated structure in detail.

12. (a) Discuss in detail with sketches the different types of beam to column connections used in framed precast reinforced concrete building.

Or

- (b) Explain in detail about long and cross Wall large panel building.

13. (a) Explain in detail the manufacture of staircase slabs. Also explain the precautions taken during the installation process.

Or

- (b) Discuss the points to be considered in deflection control for short term and long term loads.

14. (a) Give the steps involved in the design of shear walls.

Or

- (b) Explain in detail about load transfer mechanism from floor to wall panels, with reference to different connection details.

15. (a) Discuss the precautions to be taken while erection and joining of precast elements.

Or

- (b) Discuss in detail about design of wind bracing in a precast building.

PART C — (1 × 15 = 15 marks)

16. (a) As an engineer in-charge of precast installation, illustrate the provisions and procedure you would consider in the site, right from start to end of the project.

Or

- (b) As an expert, discuss the suitability of reinforced cement concrete for the prefabricated structures.