20/12/23 - FN.

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 20453

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth Semester

Civil Engineering

CE 3003 – PREFABRICATED STRUCTURES

(Regulations 2021)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Describe the aims of prefabrication.
2. Describe the benefits and drawbacks of prefabricated structures.
3. Differentiate between prefabricated one-way and two-way slabs.
4. List the requirements for supplying shear walls in prefabricated structures.
5. Explain how joints deform.
6. Define breaking down structures.
7. Distinguish between rigid and hinge joints in prefabricated construction.
8. List the fundamental requirements for precast construction joints.
9. Describe the strengthening of structures to withstand initial damage.
10. Define progressive collapse.

PART B — (5 × 13 = 65 marks)

11. (a) Discuss the prefabrication, production process, transportation and erection principles.

Or

(b) Detail the importance of modular coordination and standardisation for prefabricated structures.

12. (a) Describe the cross section of beams and columns used in precast construction with diagrams.

Or

(b) Discuss the various prefabricated wall panels made from reinforced concrete.

13. (a) Exemplify the statement "design of cross section based on the efficiency of the materials used' with specific instances.

Or

(b) What is the rationale for allowing joint deformation? Please provide a comprehensive explanation.

14. (a) Describe in detail the expansion joints and contraction joints.

Or

(b) Explain with a sketch the connection between beam and column and column and foundation.

15. (a) Explain importance of avoidance of progressive collapse.

Or

(b) Describe in detail the provision of the Code for contemplating the impact of cyclones.

PART C — ($1 \times 15 = 15$ marks)

16. (a) Discuss the recommendations for the precast element's detailing in terms of the connections and assembly of the structural slab and wall system.

Or

(b) Explain how equivalent design loads are calculated when the structure is subjected to earthquake loading.

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