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Question Paper Code : 61333

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

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. Define the methodology adopted to dis-unit prefabricated elements
2. What solvability check is to be adopted while launching prefabricated elements?
3. What design provisions to be given while designing prefabricated one way and two-way slabs?
4. Define on-site and off-site design techniques
5. What provision are to be given while doing connection prefabricated elements as per codal standards?
6. What are the design changes to be done to use floor slabs as wall panels for prefabricated structures?
7. Draw and mention the cross section details of sandwich wall panels.
8. What types of loads are to be considered while designing wall panels?
9. What is the function of corbels?
10. List the major structural of components of single - storey industrial sheds with crane gantry systems.

PART B — (5 × 13 = 65 marks)

11. (a) Discuss in detail the basic principles of Modular co-ordination and standardization.

Or

- (b) Broadly explain the requirements for planning and layout of prefabrication industry.

12. (a) Explain the design and execution steps involved for a typical wall and slab panel elements.

Or

- (b) Discuss about the different types of Beam to Column connections with neat sketches.

13. (a) What are the points to be considered in deflection control for short term and long-term loads and also list the codal standards?

Or

- (b) Explain the types of joints in prefabricated construction and their behaviour.

14. (a) What are the steps involved in the design of shear walls along with codal standards?

Or

- (b) Explain in detail about connections and joints for interlocking wall panels.

15. (a) Explain the types of configuration roof trusses and design principles used in industrial buildings.

Or

- (b) Explain the design concepts and methods of wind bracing in industrial buildings.

PART C — (1 × 15 = 15 marks)

16. (a) Explain in detail the manufacturing of roof slabs. Also explain the precautions while it is being launched.

Or

- (b) Explain the disuniting, production, transportation, erection and stages of loading of prefabricates.