

## **ST5002 PREFABRICATED STRUCTURES**

### **DETAILED SYLLABUS**

#### **UNIT I DESIGN PRINCIPLES**

General Civil Engineering requirements, specific requirements for planning and layout of prefabrication plant. IS Code specifications. Modular co-ordination, standardization, Disuniting of Prefabricates, production, transportation, erection, stages of loading and code provisions, safety factors, material properties, Deflection control, Lateral load resistance, Location and types of shear walls.

#### **UNIT II REINFORCED CONCRETE**

Prefabricated structures - Long wall and cross-wall large panel buildings, one way and two way prefabricated slabs, Framed buildings with partial and curtain walls, - Connections – Beam to column and column to column.

#### **UNIT III FLOORS, STAIRS AND ROOFS**

Types of floor slabs, analysis and design example of cored and panel types and two-way systems, staircase slab design, types of roof slabs and insulation requirements, Description of joints, their behaviour and reinforcement requirements, Deflection control for short term and long term loads, Ultimate strength calculations in shear and flexure.

#### **UNIT IV WALLS**

Types of wall panels, Blocks and large panels, Curtain, Partition and load bearing walls, load transfer from floor to wall panels, vertical loads, Eccentricity and stability of wall panels, Design Curves, types of wall joints, their behaviour and design, Leak prevention, joint sealants, sandwich wall panels, approximate design of shear walls.

#### **UNIT V INDUSTRIAL BUILDINGS AND SHELL ROOFS**

Components of single-storey industrial sheds with crane gantry systems, R.C. Roof Trusses, Roof Panels, corbels and columns, wind bracing design. Cylindrical, Folded plate and hyper-prefabricated shells, Erection and jointing, joint design, hand book based design.

For Syllabus, Question Papers, Notes & many More

**REFERENCES:**

1. Koncz.T., Manual of Precast Concrete Construction, Vol.I II and III & IV Bauverlag, GMBH, 1971.
2. Laszlo Mokka, Prefabricated Concrete for Industrial and Public Structures, Akademiai Kiado, Budapest, 2007.
3. Lewicki.B, Building with Large Prefabricates, Elsevier Publishing Company, Amsterdam/London/New York, 1998.
4. Structural Design Manual, Precast Concrete Connection Details, Society for the Studies in the use of Precast Concrete, Netherland Beton Verlag, 2009.
5. Warszawski, A., Industrialization and Robotics in Building - A managerial approach, Harper and Row, 1990

**OBJECTIVE:**

To Study the design principles, analysis and design of elements.