

## ADVANCED REINFORCED CONCRETE DESIGN

Lectures / Tutorials : 4 Periods/Week  
Semester End Exam. : 3 Hours

Sessional marks : 40  
Semester End Exam. marks: 60  
Credits : 4

### Course objectives:

- Course is designed to shape the concrete and use the steel bars for external loads on different building elements.
- To understand the codal recommendations for methods of design
- To analyse and design of various reinforced concrete structures like water tanks.
- Analysis and design of intz tank and its staging
- Raft foundation, corbels, underground and on ground circular water tanks, intz tank, bunkers and silos
- To analyse and design of Raft Foundations.
- To analyse and design of Pile Foundations

### Course outcomes:

- Students can handle the isolated design of individual elements independently.
- Indian Standards of approach can be practiced by the student.
- Students can handle the analysis and design of rectangular and circular tanks.
- Students can handle the Raft foundation
- Students can handle the Pile Foundations

### UNIT – I

#### Water tanks resting on ground (Working stress method)

Introduction, Circular and Rectangular tanks

### UNIT – II

#### Elevated circular water tank (Working stress method)

Introduction ; Design of elevated circular water tank

### UNIT – III

#### Design of Intze tank (Working stress method)

Calculation of dimensions; Design of top dome; Design of top ring beam ; Design of cylindrical wall ; Design of bottom ring beam

### UNIT -IV

#### Raft Foundations (Limit state method)

Soil design; Design of slab; Design of beams

#### Pile Foundations (Limit state method)

Introduction; Loads on pile groups ; Soil design of a pile; Structural design of a pile

### NOTE

*Two questions of 12 marks each will be given from each unit out of which one is to be answered. Twelve questions of one mark each will be given from entire syllabus which is a compulsory question.*

### TEXT BOOKS

1. Reinforced concrete , Vol.1 & 2 by H. J. Shah, Charotar publishing house Pvt. Ltd, 2011.

**REFERENCE BOOK**

1. RCC Designs by BC Punmia et.al. , 10<sup>th</sup> Edition, Laxmi Publications (P) Ltd. 2006.