

## **31061 CONSTRUCTION MANAGEMENT WITH MIS**

### **DETAILED SYLLABUS**

#### **Unit I**

##### **1.1 CONSTRUCTION SECTOR IN INDIA**

Construction Management – Definition- Need – Scope - Objectives and & functions - Role of government and private construction agencies – Types of construction sectors - Public and Private functions of construction management in national development - Construction practice:- the owner, consultant, and contractor - Duties and responsibilities - Various stages of a construction project.

##### **1.2 FEASIBILITY STUDY**

Study of necessity of project– Technical feasibility, Financial feasibility, Ecological feasibility, Resource feasibility, Recovery from the project, Economical Analysis – Building Economics – Preliminary studies-Analysis – valuation.

##### **1.3 PLANNING OF CIVIL ENGINEERING PROJECT**

Objectives of planning – Public Project - Preliminary planning – Design factors – Site utilization- – Reconnaissance survey – Preliminary survey – Analysis and plotting of data – Estimate : preliminary and detailed estimate –Project report – Land acquisition – Administrative approval – Technical sanction – Budget provision- Private project – Advantages of planning to client and engineer – limitations -Stages of planning by owner and contractor.

##### **1.4 CONTRACT MANAGEMENT**

Types of contracts - Contract documents - Contractual obligations -Specifications - Tender notice – Types - Tender documents - Earnest money deposit (EMD) and Security deposits (SD) - Scrutiny and acceptance of a tender - Contract agreement – Contractual changes and termination of contract – Work order – Execution of agreement – Sub contract - Rights and duties of sub-contractor.

#### **Unit II**

##### **2.1 CONSTRUCTION ORGANISATIONS AND THEIR SUPERINTENDENCE**

Forms of business organizations - sole proprietorship – Partnership - Joint stock company,- Co-operative society,- and State enterprises- Advantages and Disadvantages -delegation of responsibility, personnel requirements and division of works – Decentralization - Construction supervision and Superintendence –

Requirements and Responsibilities of Executives of the project – Qualities of Efficient construction Manager - Pay rolls and Records - Purchase and delivery of construction materials and equipment's – Percentage completion report - Insurance record - Project office requirement - Organisation chart of a small / medium / large construction company (broad outline only).

## 2.2 DEPARTMENTAL PROCEDURE AND ACCOUNTING

Organisation of P.W.D. - Responsibilities of officers - Accounting procedure (administrative sanctions, technical sanctions, payment of bills) – Imprest and Temporary accounts – Cash book - Works register - Accounting for consumable materials - Record for tools and plants – Importance of M-book and its entries – Work charged establishment – Nominal muster roll (N.M.R) – Daily labour reports (D.L.R)

### Unit III

#### 3.1 SCHEDULING AND TIME MANAGEMENT

Scheduling – Definition – Preparation of Schedule – uses and advantages – Classification of Schedules – Methods of scheduling – Bar chart – Job layout – Work breakdown chart(WBC) – Network for projects management – Activity – Event – Dummies – Basic assumptions in creating a network – Rules for developing networks – Fulckerson's rule for numbering the events - Critical Path Method Critical and Subcritical paths – Critical and Non critical activities/events - – Significance of critical path – Simple Problems -PERT – Time estimate – EST, EFT, LST, LFT - Earliest expected time – Latest allowable occurrence time –Floats - Slack. Standard deviation - Variance – Simple problems.

#### 3.2 RESOURCE MANAGEMENT

Definition – Need for resource management – Optimum utilization of resources-finance, materials, machinery, human resources - Resource planning – Resource levelling and its objectives – Construction planning – Stages – Operations – Schedule –Crashing – Need for crashing an activity – Methods and tips for crashing – Time Vs Cost optimization curve – Cost slope and its significance in crashing – simple problem on resource levelling ( not for examination)

### Unit IV

#### 4.1 QUALITY MANAGEMENT AND SAFETY

Importance of quality – Elements of quality – Quality assurance techniques ( inspection, testing, sampling ) Importance of safety – Causes of accidents –

Role of various parties ( designer / employer / worker ) in safety management – Benefits – Approaches to improve safety in construction.

#### 4.2 CONSTRUCTION DISPUTES AND THEIR SETTLEMENT

Introduction – Development of disputes – Categories of disputes – Modes of settlements - Arbitration

#### 4.3 CONSTRUCTION LABOUR AND LEGISLATION

Need for legislation - Payment of wages Act - Factories Act – Contract labour( Regulation and abolition) Act – Employees Provident Fund (EPF) Act.

#### 4.4 ETHICS IN ENGINEERING

Human values - Definition of Ethics - Engineering ethics - Engineering as a profession - Qualities of professional - Professional institutions - Code of ethics - Major ethical issues - Ethical judgement - Engineering and management decision - Value based ethics.

### Unit V

#### 5.1 ENTREPRENEURSHIP

Definition – Role and Significance – Risks and Rewards – Concepts of Entrepreneurship – Profile and requirement of entrepreneur - Programmes existing in India – SISII, DIC, TANSIDCO – Funding and technical assistance to Entrepreneurship- NIDCO, ICICI, IDBI, IFCI, SFC

#### 5.2 INFORMATION MANAGEMENT AND COMPUTERS

Introduction – Definition of MIS – Out lines of MIS – Use of computers in construction industry – Requirements of MIS – A data base approach – Definition – Benefits - A data base approach to contractor's account and its advantage – Basic concepts of estimation – Project management and operations simulation packages – Construction automation and Robotics.

#### 5.3 FINANCIAL MANAGEMENT

Elements of cash flow – Time value of money – Interest rate of capital – Present value computation - NPV method – IRR method – simple problems - Global banking culture - Types of banks –Activities of Banks – Corporate finance – Personal, retail and rural banking – Treasury management.

**Reference Book:** 1. Sanga Reddy. S, “Construction Management”, Kumaran Publications, Coimbatore. 2. Sengupta.B, &H.Guha. “Construction Management and Planning”, Tata McGraw Hill Publishing Company Ltd., New Delhi