4014 - QUANTITY SURVEYING AND COSTING

Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)			
					Theory		Practical Ex.	Total
Lectures	Practical	Credits						
4	4	8	25	25	4Hrs.	100	25	175

Pre-requisite	Source
4010	CVL

Semester	Theory	Test	Total	TW	PR	Gr Total
	75	25	100	50	25	175

RATIONALE: - This is core subject in Civil Engineering. The student must acquire knowledge and skills in measurements of quantities, investigating factors affecting cost of an item of work, and preparing detailed estimates. The student is expected to gain general knowledge and awareness of valuation, functions of P.W.D., and office records. The students must also understand the salient features and relevance of tenders and contracts adopted for civil engineering works so as to gain fair knowledge of these methods. The scope of the syllabus is restricted to general aspects of the prescribed text-books.

COURSE CONTENTS	Hrs	Mks
1. QUANTITY SURVEYING AND COSTING Importance of estimating in construction industry. Definition, purpose of estimating, data required to prepare an estimate, components of estimate-measurements sheets and abstract sheets. Attributes of an ideal quantity surveyor. Types of estimates- Approximate, detailed, supplementary, revised, annual maintenance and repair estimates, use of each type.	5	8
2. MODE OF MEASUREMENT Standard units of measurements. Criteria for selection of units. Units and modes of measurements for different items of work as per I. S. 1200 (latest-edition). Significance of and provision for centage, contingencies and work charged establishment. Lump sums, provisional sums, spot items, provision for services such as water supply, sanitation, and electrification. Case studies and problems solving for use of above for various civil engineering works.	7	14
3. ABSTRACTING Methods of taking out quantities- P.W.D-method, centre- line method, problem-solving. Computation of earthwork, quantities, standard earthwork-formula (mean area method and mean depth method). [Cases with transverse slope to ground not expected], problem solving. Functions and mode of preparing the abstract, checking the abstract, report on estimates. Schedule of rates, types, contents and uses.	8	14
4. APROXIMATE ESTIMATING Definition and purpose of approximate estimate. Different methods of approximate estimation of a building. Methods of approximate estimation of highways, water supply project and sewerage scheme.	2	4
5. RATE ANALYSIS Factors influencing the cost of an item of work either directly or indirectly, factors generally considered for analysis of rate. Transportation- mode, capacity and cost. Task-work- Definition, factors affecting task-work for different items of building construction. Rate analysis for common construction items of work (as specified in term-work only)	8	10
6. VALUATION (No numerical problems). Importance of valuation in construction industry. Credentials of a valuer. Classification of value-Definition and relevance of each: assessed value, book value, market value, salvage value, scrap value, potential value, capitalised value. Classification of ownership; freehold and leasehold tenure-Their characteristics, significance of immovable property. Various situations necessitating	5	8

the application of valuation. Factors affecting the value of an asset. Valuation and rent fixation of a government building.

7. PUBLIC WORKS DEPARTMENT 5 6

Skeleton organisation of P.W.D. Classification of works-Original works, repair works, minor works, petty works, maintenance and repair works, deposit works. Stages in execution of work-Administrative approval, expenditure sanction, revised approvals (administrative, expenditure and technical). Methods of executing work- Contracts, employment of daily labour, piecework, advantages and disadvantages of each.

8. P.W.D ACCOUNTS 4 6

Cash-imprest and temporary advance. Importance of maintaining sites and office records. Types of records- Engineers diary, standard measurement book, muster- roll, work abstract, materials at site (M.A.S.) account.

9. TENDERS 8 12

Definition and purpose of tender bid. Notice inviting tender and its characteristics. Opening of tenders, comparative statement, acceptance of tenders, rejection of tenders, work -order letter. Types of tenders- Characteristics, advantages and disadvantages. Earnest money deposit and security deposit: definition and relevance.

10. CONTRACTS 7 12

Definition of contract, essentials of valid contract. Types of engineering contracts-their characteristics, advantages and disadvantages of each: Lump sum contract, item-rate contract, percentage rate contract, labour-contract, material-contract. Contract documents-Listing of essential parts and relevance of each [details of framing of entire document not expected]. Condition of contracts and obligations of contractor, engineer and client. Indian Contract Act 1872- Salient features. Arbitration- Indian Arbitration & Counciliation Act –1996.

11. SPECIFICATIONS 5 6

[Detail specification writing for items of work not expected in examinations.] Definition and purpose of specification, legal aspects of specification. Planning of specification. Types of specification (brief and detailed type). Case study of detail specification writing for any common items of civil engineering works [refer term-work section]

Total 64 100

TERM WORK

1) Detailed estimate of single -storied residential building, having maximum three rooms, with sloping and flat roof, including calculation of percentage cost for foundation, superstructure, woodwork and roofing
2) Analysis of rates for building construction (any six items)- Earthwork excavation, laterite stone masonry in cement mortar, brickwork in cement mortar, pre-cast terrazzo tile flooring, R.C.C. – form-work, concrete and reinforcement, wooden doors and windows, plastering and pointing, Mangalore tile roofing, conventional waterproofing.
3) Preparation of detailed specification for any three items as referred above.
4) Preparation of bar-bending schedules for individual R.C.C. components – isolated footing, simply supported and cantilever beams. a slab panel, column.
5) Preparation of notice inviting tenders for building referred to in 1 above

REFERENCE BOOKS

1. Civil Engineering Contracts and Costing by B. S. Patil.
2. Elements Of Estimation and Costing by S.C. Rangawala
3. C.P.W.D. Specifications.
4. Estimation and Costing by B. N. Dutta.
5. Estimation, Costing and Specification by M. Chakraborti.
6. Goa Schedule of Rates.