

Techno India NJR Institute of Technology



Course File

Estimation & Costing (6CE4-05)

For Techno India NJR Institute of Technology
पंकज पौरवाल
Dr. Pankaj Kumar Perwal
(Principal)

Jitendra Choubisa
(Assistant Professor)
Department of CE

Course Overview:

This course is structured in such a way that its aim is to provide the student with the ability to estimate the quantities of item of works involved in buildings, water supply and sanitary works, road works and irrigation works, and also to equip the student with the ability to do rate analysis, valuation of properties and preparation of reports for estimation of various items. Main objective is to develop in the student the art and skill whereby a monetary value can be placed on the volume of work previously measured. Also other objectives include to develop an awareness of those factors that affect the cost of construction work and to analyse the influences that effect change in these factors. Course helps students and encourage the habit of systematically recording all those statistics which are the stock in trade of the good estimator.

Estimating is the most important of the practical aspects of construction management, and the subject deserves the closest attention of one aspiring to a career in the profession. It is a comparatively simple subject to understand; however, as it brings one up against practical work, methods and procedure, knowledge of it cannot be acquired without close application.

Course Outcomes:

CO. NO.	Cognitive Level	Course Outcome
1	Application	Students will evaluate the estimate of quantities for a Residential Building & Abstract cost Estimate.
2	Evaluation	Students will be able analyze the rates of work quantities and labor.
3	Evaluation	Students will be able to evaluate the calculation regarding earth work quantity for roads and canals, Analyze different types of contracts, tender document for building & valuation
4	Synthesis	Students will remember the concepts of Valuation.
5	Synthesis	Student will create Bill of Quantities.

Prerequisites:

- Students with basic knowledge of mathematical geometry can understand the topics clearly.
- Students with understanding of basic mathematics principle can grasp the topics of this course.
- Students with a basic calculation methodologies can perform item rate calculations.

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Course Outcome Mapping with Program Outcome:

Estimating & Costing															
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO365.1	3	2	2	2	2	2	1	1	2	1	2	2	2	3	2
CO365.2	3	2	2	2	2	2	1	1	2	1	2	2	2	3	2
CO365.3	3	2	2	2	2	2	1	1	2	1	2	2	2	3	2
CO365.4	2	3	3	3	2	1	1	1	2	2	1	2	2	2	2
CO365.5	2	3	3	3	2	1	1	1	2	2	1	2	2	2	2
CO365 (AVG)	2.6	2.4	2.4	2.4	2	1.6	1	1	2	1.4	1.6	2	2	2.6	2

Course Coverage Module Wise:

Lecture No.	Unit	Topic
1	1	INTRODUCTION to scope, objective and outcome of subject
2	2	PURPOSE AND IMPORTANCE of estimates, principles of
3	2	Methods of taking out quantities of items of work.
4	2	Mode of measurement
5	2	Numerical on Long wall & Short wall method
6	2	Numerical on Long wall & Short wall method
7	2	Numerical on Long wall & Short wall method
8	2	Numerical on Long wall & Short wall method
9	2	Measurement sheet and abstract sheet; bill of quantities
10	3	Types of estimate plinth area rate, cubical content rate
11	3	Types of estimate preliminary, original, revised and supplementary estimates
12	3	Revised and supplementary estimates
13	3	Revised and supplementary estimates
14	4	RATE ANALYSIS: Task for average artisan
15	4	Various factors involved in the rate of an item
16	4	Material and labor requirement for various trades
17	4	Preparation for rates of important items of work
18	4	Current schedule of rates. (C.S.R.)

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19	4	Current schedule of rates. (C.S.R.)
20	5	DETAILED ESTIMATES: Preparing detailed estimates
21	5	Numerical on Detailed Estimates
22	5	Numerical on Detailed Estimates
23	5	Numerical on Detailed Estimates
24	5	Numerical on Detailed Estimates
25	5	Numerical on Detailed Estimates
26	5	Numerical on Detailed Estimates
27	5	Services for building such as water supply, drainage & electrification
28	5	Services for building such as water supply, drainage & electrification
29	5	Services for building such as water supply, drainage and electrification
30	5	Estimating of culverts
31	5	Estimating of culverts
32	6	VALUATION: Purposes, depreciation
33	6	Sinking fund, scrap value
34	6	Year's purchase, gross and net income
35	6	Dual rate interest, methods of valuation
36	6	Dual rate interest, methods of valuation
37	6	Rent fixation of buildings
38		Revision of course work
39		Revision of course work
40		Revision of course work

TEXT/REFERENCE BOOKS

1. Chakraborti, M, Estimation, costing, specifications and valuation in civil Engineering – National Half-tone Co. Calcutta, 2005.
2. Dutta B.N., Estimation and costing in civil engineering: theory and Practice – UBS Publishers Distributors Ltd, 2006
3. Birdie, G.S. - Estimation and costing in civil engineering – Dhanpat Rai Publishing co. ltd.

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Course Level Problems (Test Items):

CO.NO.	Problem description
1	A. Identify and differentiate between the two types of estimate. B. Prepare a format for preparation and presentation of an estimate.
2	A. Draw up a check list for estimate control. B. Define a unit cost estimate.
3	A. Prepare an estimate for land excavation. B. State the types of foundations.

Assessment Methodology:

1. Practical exam in lab where they have to analyze the problem statement. (Once in a week)
2. Assignments one from each unit.
3. Midterm subjective paper based on topics as mentioned in the modules. (Twice during the semester)
4. Final paper at the end of the semester subjective.

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TEACHING AND LEARNING RESOURCES UNIT-WISE

1. Wikipedia

https://en.wikipedia.org/wiki/Cost_estimate#:~:text=A%20cost%20estimate%20is%20the,may%20have%20identifiable%20component%20values.

2. Youtube

<https://www.youtube.com/watch?v=r0aDjTLxy5c>

3. Site Links:

<https://www.civilconcept.com/types-of-estimating-and-costing/>

<https://theconstructor.org/construction/estimating-costing/>

<https://www.slideshare.net/thomasjbritto/estimating-andcosting-book>

<https://www.udemy.com/course/estimating-and-costing/>

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RAJASTHAN TECHNICAL UNIVERSITY, KOTA
Syllabus

3rd Year - VI Semester: B.Tech. (Civil Engineering)

6CE4-05: ESTIMATING & COSTING

Credit: 2
2L+0T+0P

Max. Marks: 100(IA:20, ETE:80)
End Term Exam: 3 Hours

SN	CONTENTS	Hours
1	Introduction: Objective, scope and outcome of the course.	1
2	Purpose and importance of estimates, principles of estimating, Methods of taking out quantities of items of work. Mode of measurement, measurement sheet and abstract sheet; bill of quantities.	4
3	Estimating: Types of estimate, plinth area rate, cubical content rate, preliminary, original, revised and supplementary estimates for different projects.	6
4	Rate Analysis: Task for average artisan, various factors involved in the rate of an item, material and labour requirement for various trades; preparation for rates of important items of work. Current schedule of rates. (C.S.R.)	6
5	Detailed Estimates: Preparing detailed estimates of various types of buildings, R.C.C. works, earth work calculations for roads and estimating of culverts Services for building such as water supply, drainage and electrification.	6
6	Valuation: Purposes, depreciation, sinking fund, scrap value, year's purchase, gross and net income, dual rate interest, methods of valuation, rent fixation of buildings.	5
	TOTAL	28

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Office of Dean Academic Affairs
Rajasthan Technical University, Kota



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Academic Administration of Techno NJR Institute
Syllabus Deployment

Name of Faculty	: Mr. Jitendra Choubisa	Subject Code: 6CE4-05
Subject	: Estimating & Costing	
Department	: Civil Engineering	Sem: VI
Total No. of Lectures Planned: 40		

COURSE OUTCOMES HERE (3 OUTCOMES)

At the end of this course students will be able to:

- CO1. To prepare the estimations for road, building, canal structures.
- CO2. Draft details specifications and work out rate analysis of projects.
- CO3. Prepare costs estimation of civil engineering works.

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12	3	Revised and supplementary estimates
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TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY UDAIPUR

I MID TERM ONLINE EXAMINATION – June - 2021

III YEAR VI SEM

MAX MARKS: 80

Estimation & Costing

TIME: 2 Hr.

Instruction for candidates:

- PART-A Attempt all Questions
PART-B Attempt any 5 Questions
PART-C Attempt any 2 Questions

Q.1 Answer the following terms:

PART-A

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PART-B

Q.2 Write and explain following types of estimate: Preliminary Estimate & Plinth area Estimate.

(8 MARKS)

Q.3 Explain what is out turn work. Write Out turn work of any 5 items.

(8 MARKS)

Q.4 Explain labor requirement for following works:

- | | | |
|---------------------------------------|---|------------------|
| 1. Earthwork per 1000 ft ³ | 2. Cement Concrete work per 100 ft ³ | |
| 3. RCC Work per 100 ft ³ | 4. Stone work per 100 ft ³ | (8 MARKS) |

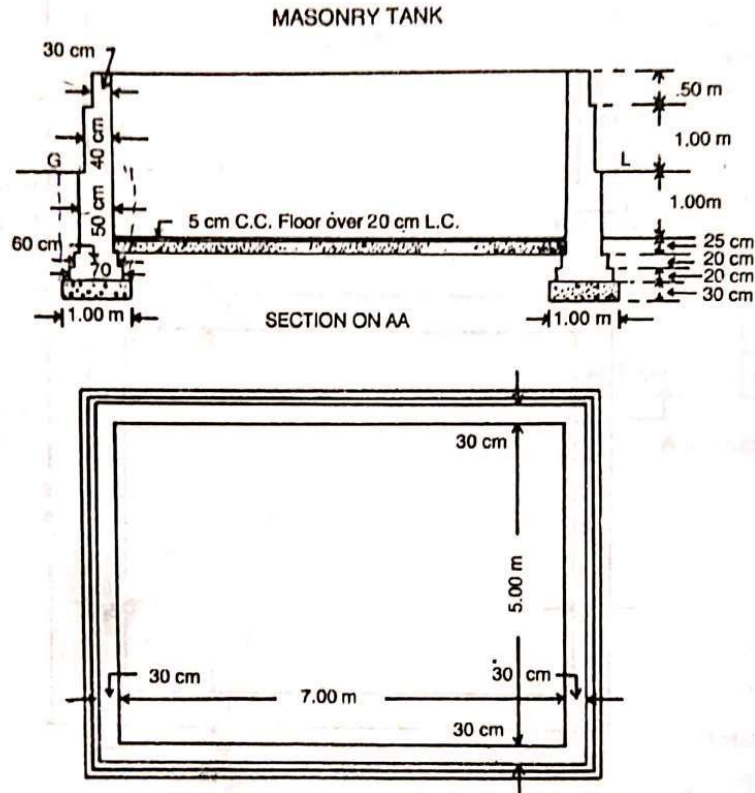
Q.5 Write material requirement for following items of works:

- | | | |
|--|---|------------------|
| 1. Brick required per m ³ . | 2. Agg., Sand & Cement for 1:2:4 concrete | |
| 2. Dry mortar for 12mm (1/2") plastering | 4. 2 cm (3/4") thick DPC 1:2 | (8 MARKS) |

Q.6 Describe what Long Wall and Short Wall method for estimation. **(8 MARKS)**

Q.7 Estimate the following quantities for given water tank drawings:

Earthwork in excavation, Lime concrete in Foundation, 1st Class brickwork in 1:6 in superstructure and Plinth **(8 MARKS)**



PART-C

Q.8 Write Units of Measurement for following item of work:

- | | |
|-----------------------------|---------------------------|
| (a) Earthwork in excavation | (b) Cutting of Trees |
| (c) Surface Dressing | (d) Brickwork |
| (e) Soling | (f) R.C.C |
| (g) Formwork | (h) Terraced roofing tile |
| (i) Steel work | (j) Wire Fencing |

(10 MARKS)

Q.9 Write Units of Measurement for following item of materials:

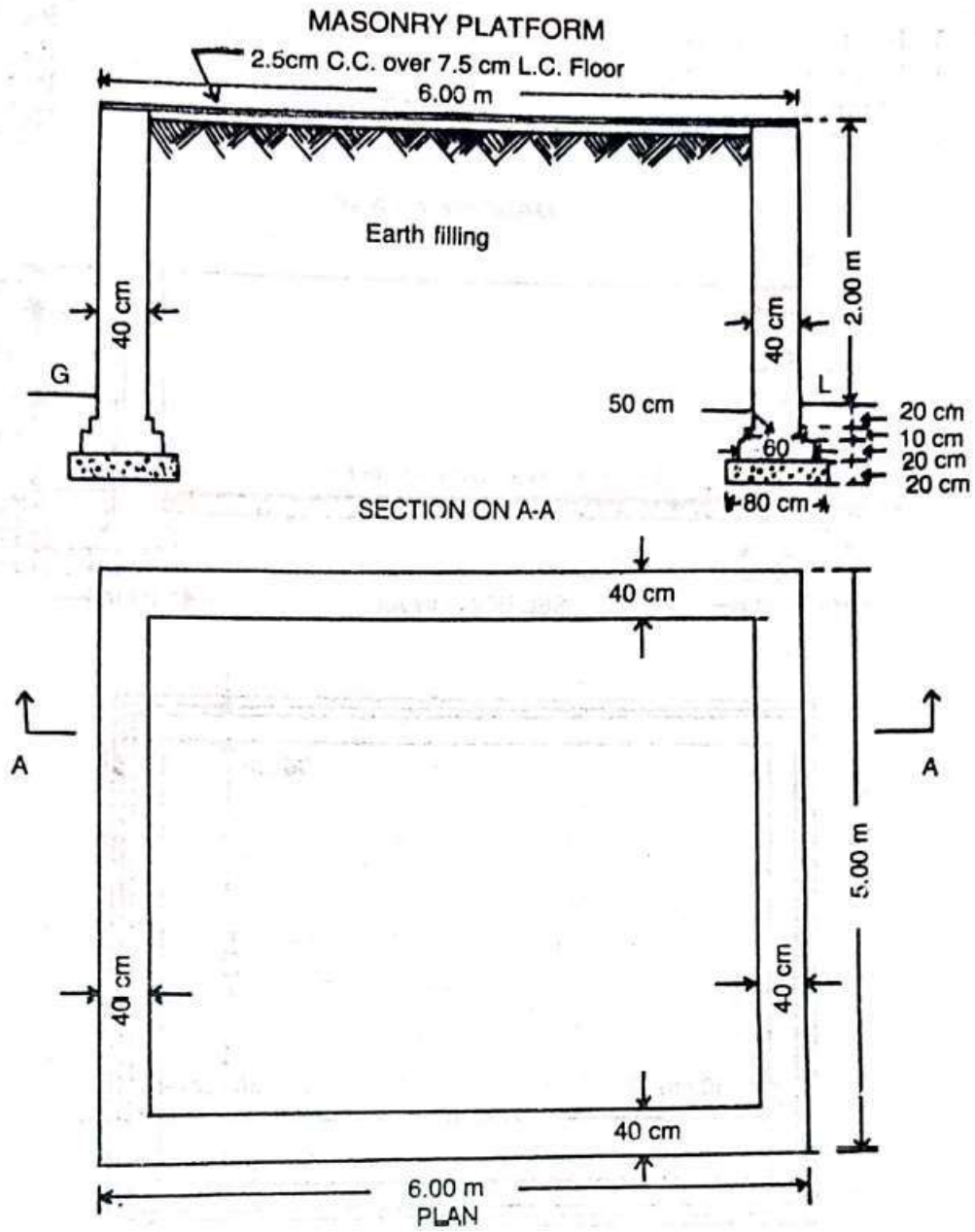
- | | |
|-------------------|-----------------------|
| (a) Bricks | (b) Cement |
| (c) Lime | (d) Stone, Boulders |
| (e) Marble slab | (f) Paints, Emulsions |
| (g) Pipe fittings | (h) Water Proofing |
| (i) Tiles | (j) Wire |

(10 MARKS)

Q.10 Estimate the following quantity of given masonry platform:

Excavation in foundation, Lime concrete in foundation, First class brickwork, 12mm plastering outside, 2.5 cm c.c floor including 7.5 cm L.C. **(10 MARKS)**

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**TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY
UDAIPUR**

Civil Engineering Department

B. TECH III- YEAR (VI Sem.)

II MID-TERM (2020-2021)

SUBJECT – ESTIMATION & COSTING

Time: 1Hr 30 minutes + 15 Minutes for Submission

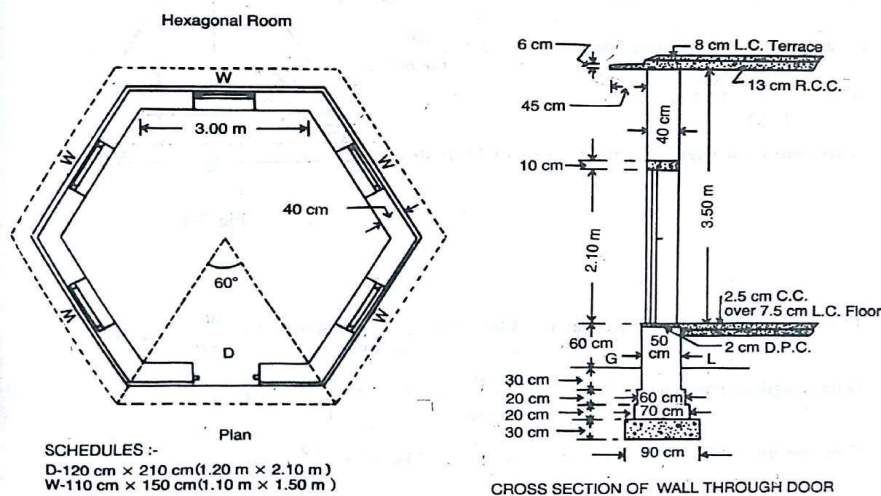
Max. Marks: 40

Attempt any five questions.

[5 * 8 =40]

1. Explain what is detailed estimate? [CO1]
2. What are the various factors involved in finalizing the rate of an item. [CO2]
3. What do you understand by CSR (Current Schedule of Rates). [CO2]
4. The plan and part cross-section of a hexagonal room are given in below figure. Estimate the quantities of
 - (1) Earthwork in excavation in foundation,
 - (2) Lime concrete foundation,
 - (3) I-class brickwork in foundation and plinth in lime mortar,
 - (4) Damp proof course
 - (5) I-class brickwork in superstructure in lime mortar,
 - (6) R.C.C. work in roof including chujja and lintels, [CO1]

ESTIMATE OF A HEXAGONAL ROOM



5. Estimate the cost of earthwork for a portion of road at the rate of Rs. 465.00 in banking and Rs. 365.00 in cutting For 400 m length from the following data: Formation width of road is 10m. Side slopes are 2:1 in banking and 1.5: 1 in cutting. [CO3]

Station	Distance in Meters	R.L. of Ground	R.L. of Formation
25	1000	51.00	52.00
26	1040	50.90	Downward Gradient of 1 in 200
27	1080	50.50	
28	1120	50.80	
29	1160	50.60	
30	1200	50.70	
31	1240	50.20	
32	1280	51.40	
33	1320	51.50	
34	1360	51.30	
35	1400	50.60	

6. Explain the Long wall – Short Wall method and Centre line method with Formulas and Compare them. [CO1]

7. Estimate the cost of a masonry water tank from the given drawings,

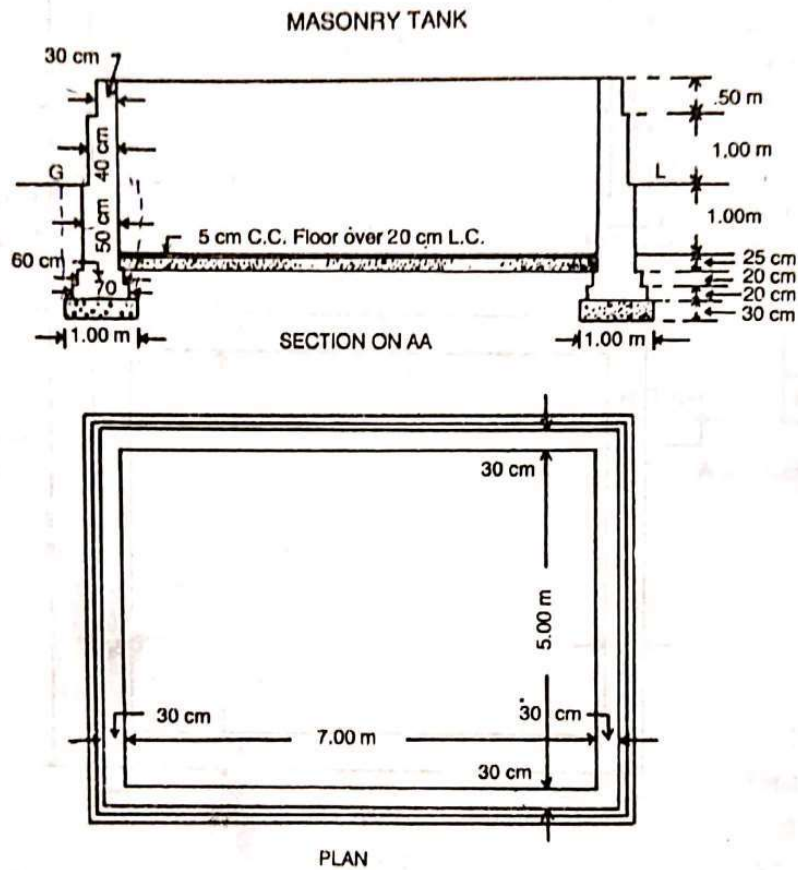
General Specifications. Cement mortar 1: 6. Wall finishing and outside 12 mm cement plastered 1: 4 with local sand.

Flooring 5 cm cement concrete 1:1:3 over 30 cm Lime concrete with neat cement finishing.

Foundation - Lime concrete.

Masonry- 1st class brickwork in Inside 12 mm cement plastered 1: 2 with coarse sand.

[CO2]



X

X

X

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