Techno India NJR Institute of Technology

(Approved by AICTE, New Delhi and Affiliated to Rajasthan Technical University Kota (Raj.))

Course File

Subject Title/Subject Code: Estimation & Costing (6CE4-05)

6CE4-05

Semester: VI Year: III

Name of the Faculty: Mr. Gourav Purbia

E-mail id: gourav.purbia@technonjr.org

Class Schedule

Total Number of Lectures: 28

i**) Course Objective**

This course equips students with essential skills in estimating and costing for civil engineering projects. Students will learn to prepare various types of estimates, conduct rate analysis, and develop detailed cost assessments for buildings, infrastructure, and services. The course also covers valuation techniques, including depreciation and rent fixation, enabling students to manage project costs effectively and make informed financial decisions.

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INDEX - COURSE FILE

Techno India NJR Institute of Technology

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VISSION & MISSION OF INSTITUTE

VISSION

Empowering student with recent and emerging technologies to create innovative technical leaders capable of contributing to industrial and societal needs for betterment of mankind across the globe.

MISSION

M1: To provide dynamic learning environment to students by providing constant exposure to latest technologies by linking closely with the industries.

M2: To establish effective interface with industry to obtain live problems to enhance critical thinking and problem-solving skills among students and consultancy projects for faculty.

M3: To provide avenues and opportunities to faculty for domain specific trainings and qualification upgradation.

M4: To develop ethical leaders with strong communication skills.

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VISION & MISSION OF DEPARTMENT

Department Vision

To increase students learning of fundamentals for designing and planning of buildings and latest technologies through industry-aligned project-based learning which will help in transforming students to be good civil engineering professionals leading to innovation and incubation of new ideas.

Department Mission

M1: To create experimental learning through solving problems of Government, Society, Smart Cities, Industry and other entities.

M2: To teach the latest technologies to the students as beyond the syllabus activity so that they are updated and industry ready.

M3: To enable engineering students, understand industry-aligned technologies and learn to find solutions from their early engineering days and this is the only way to produce globally relevant engineers solving real-life problems applying current technologies.

M4: To enable students to generate projects through problem faced by and requirement of Smart cities, industry, Government and other entities whereby those outlined problem statements are to be studied deeply by a group of faculty members to convert them into real-time project format.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs 1: To provide an in-depth understanding of the fundamentals of Civil Engineering and create a foundation for lifelong learning to facilitate a progressive career in the construction Industry, as an entrepreneur and in pursuit of higher studies.

PEOs 2: To equip the students with technical and analytical skills to develop innovative solutions to complex real-life problems using existing and novel technologies. To equip the students with good communication and interpersonal skills, inter-disciplinary teamwork and leadership skills to enable them to fulfill professional responsibilities.

PEOs 3: To expose them to various contemporary issues which will enable them to become ethical and responsible towards themselves, co-workers, Society and the Nation.

PEOs 4: To make the student's industry ready by imparting education related to the latest technologies so that they can grab future industry jobs.

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PROGRAM SPECIFIC OUTCOMES (PSO's)

PSO1: To be aware of and initiate some-work on future technologies and new developments which may impact the future Industry 4.0.

PSO2: Hands on training on upcoming technologies and project-based learning.

PSO3: Get exposure to BIM (Building Information Modeling).

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PROGRAMME OUTCOMES (POs)

A student will develop:

PO01. ENGINEERING KNOWLEDGE: An ability to apply knowledge of Mathematics, Science and Engineering Fundamentals in Electronics and Communication Engineering.

PO02. PROBLEM ANALYSIS: Ability to analyze and interpret data by designing and conducting experiments. Develop the knowledge of developing algorithms, designing, implementation and testing applications in electronics and communication related areas.

PO03. DESIGN/ DEVELOPMENT OF SOLUTION: An ability to Design a system Component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

PO04. CONDUCTION OF INVESTIGATION OF COMPLEX PROBLEMS: Ability to Identify, formulate and solve engineering problems.

PO05. MODERN TOOL USAGE: An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

PO06. THE ENGINEERING AND SOCIETY: Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.

PO07. ENVIRONMENT & SUSTAINABILITY: Understand the impact of professional engineering solution in societal and environmental contexts, and demonstrate the knowledge of, and need of sustainable development.

PO08. ETHICS: An ability to understand the professional, social and ethical responsibility.

PO09. INDIVIDUAL AND TEAM WORK: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. COMMUNICATION: An ability to Communicate effectively in order to succeed in their profession such as, being able to write effective reports and design documentation, make effective presentations.

PO11. PROJECT MANAGEMENT & FINANCE: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in team, to manage projects and in multidisciplinary environment.

PO12. LIFE-LONG LEARNING: Recognize the need and an ability to engage in life-long learning.

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COURSE OUTCOMES (COs) OF THE SUBJECT

CO No.	Mapping	Statement
CO36405.1	**Remembering**	Identify and define key concepts related to estimation, costing, and valuation in civil engineering.
CO36405.2	**Understanding**	Explain the principles of estimating and rate analysis, and describe their applications in various civil engineering projects.
CO36405.3	**Applying**	Utilize standard methods to calculate quantities, prepare estimates, and perform rate analyses for different construction activities.
CO36405.4	**Analyzing**	Examine and differentiate between various types of estimates and rate analysis techniques to determine their appropriateness for specific projects.
CO36405.5	**Evaluating**	Develop detailed and accurate estimates and cost analyses for civil engineering projects, integrating industry standards and financial considerations.

COS MAPPING WITH POs AND PSOs

Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO36405.1	2	0	0	0	0	2	1	1	0	1	2	2	2	3	2
CO36405.2	2	0	0	0	0	2	1	1	0	1	2	2	2	3	2
CO36405.3	1	0	0	0	0	2	1	1	0	1	2	2	2	3	2
CO36405.4	2	0	0	0	0	1	1	1	0	2	1	2	2	2	2
CO36405.5	1	0	0	0	0	1	1	1	0	2	1	2	2	2	2
CO36405 (AVG)	1.6	0	0	0	0	1.6	1	1	0	1.4	1.6	2	2	2.6	2

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UNIVERSITY ACADEMIC CALENDAR

Academic Calendar for Even Semester for Session

Course: Bachelor of Technology (B.TECH.)				
Course: Bachelor of Technology (B.TECH.)				
Semester	II	IV	VI	VIII
Commencement of Classes	26.02.2024	15.02.2024	15.02.2024	02.01.2024
First Mid Term	02.04.2024	20.03.2024	20.03.2024	15.02.2024
Second Mid Term	03.06.2024	06.05.2024	06.05.2024	21.03.2024
Last Working Day	10.06.2024	31.05.2024	31.05.2024	20.04.2024
Commencement of Practical Exams	01.07.2024	03.06.2024	03.06.2024	22.04.2024
Commencement of Theory Exams	19.06.2024	14.06.2024	15.06.2024	02.05.2024
Project (VIII)	06.05.2024 to 15.05.2024			
Practical Training (After II Sem.)	15.07.2024 To 31.07.2024			
Practical Training (After IV Sem.)	01.07.2024 To 17.08.2024			
Practical Training (After VI Sem.)	01.07.2024 To 17.08.2024			
Commencement of Classes for next Odd Semesters (2023-24)	I	III	V	VII
	01.08.2024	01.08.2024	20.08.2024	20.08.2024

Academic Calendar of Institute

Academic Calendar for Even semester for session 2023-24

Academic Calendar for even Semester for Session 2023-24 (Even Semester)

Course: Bachelor of Technology (B.TECH.)				
Semester	**II**	**IV**	**VI**	**VIII**
Commencement of Classes	26-02-2024	15-02-2024	15-02-2024	2-01-2024
Commencement of First Mid Term	20-04-2024	25-03-2024	25-03-2024	15-02-2024
Commencement of Second Mid Term	05-06-2024	24-05-2024	24-05-2024	21-03-2024
Last Working Day	15-06-2024	31-5-2024	31-5-2024	20-04-2024
Commencement of Practical Exams	01-07-2024	04-6-2024	03-6-2024	22-04-2024
Commencement of Theory Exams	19-6-2024	15-6-2024	14-6-2024	02-05-2024
Project (VIII)	06.05.2024 to 15.05.2024			
Practical Training (After II Sem.)	15.07.2024 To 31.07.2024			
Practical Training (After IV Sem.)	01.07.2024 To 17.08.2024			
Practical Training (After VI Sem.)	01.07.2024 To 17.08.2024			

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Evaluation Scheme

FACULTY DETAILS:

Name of the Faculty	:	Gourav Purbia
Designation	:	Technical Assistant
Department	:	Civil Engineering

1. TARGET

a) Percentage Pass: 100%
b) Percentage I class: 60 %

2. METHOD OF EVALUATION

- [x] Continuous Assessment Examinations (Mid-Term 1, Mid-Term 2)
- [x] Assignments / Seminars
- [ ] Mini Projects
- [x] Quiz
- [x] Semester Examination

Others_____

3. List out any new topic(s) or any innovation you would like to introduce in teaching the subject in this Semester.
4. Take the help of creative tools to stimulate creativity. Include slide presentations, demonstration or forms of visual exercises that will excite the young minds and capture their interest.

Signature of Faculty: **Signature of HOD**

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UNIVERSITY SYLLABUS

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Syllabus

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

6CE4-05: ESTIMATING & COSTING

Credit: 2 **Max. Marks: 100(IA:30, ETE:70)**

2L+0T+0P **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

Office of Dean Academic Affairs
Rajasthan Technical University, Kota

PRESCRIBED BOOKS

1. Chakraborti, M, Estimation, costing, specifications and valuation in civil Engineering – National Halftone 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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WEEKLY TIME TABLE OF THE TEACHER

First Time Table: with effect from (Date):

Day	1	2	3	4	5	6	7
Monday							
Tuesday							
Wednesday							
Thursday	Estimation		Estimation				
Friday	Estimation						
Saturday	Estimation						

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COURSE-PLAN

UNIT	Lect. No.	TOPICS	Teaching Methods/ Teaching Aids
1	1	Overview of the course, objectives, and outcomes.	White Board
1	2	Importance of estimation in civil engineering and its role in project planning.	White Board
1	3	Principles of estimating and its significance in construction projects.	White Board
1	4	Methods of taking out quantities of items of work.	White Board
2	5	Modes of measurement and their importance in construction estimation.	White Board
2	6	Preparation of measurement sheets and abstract sheets; Introduction to the bill of quantities.	White Board
2	7	Detailed study of various types of estimates: preliminary, original, revised, and supplementary.	White Board
2	8	Understanding plinth area rate and cubical content rate methods.	White Board
2	9	Estimation techniques for building projects.	White Board
2	10	Estimation techniques for infrastructure projects like roads and culverts.	White Board
3	11	Introduction to rate analysis and its significance in cost estimation.	White Board
3	12	Task analysis for average artisans and factors influencing the rate of an item.	White Board
3	13	Estimation of material requirements for various trades.	White Board
3	14	Estimation of labor requirements for various trades.	White Board
3	15	Detailed preparation of rates for key items of work.	White Board
3	16	Introduction to the Current Schedule of Rates (C.S.R.) and its application.	White Board
4	17	Steps in preparing detailed estimates for residential buildings.	White Board
4	18	Steps in preparing detailed estimates for commercial buildings.	White Board
4	19	Estimation techniques for R.C.C. (Reinforced Cement Concrete) works.	White Board
4	20	Earthwork calculations for road projects, including cut and fill analysis.	White Board

4	21	Detailed estimation for culverts, including materials and labor.	White Board
4	22	Estimation of services in buildings: water supply, drainage, and electrification.	White Board
5	23	Purpose and principles of valuation in civil engineering.	White Board
5	24	Concepts of depreciation, sinking funds, and scrap value in valuation.	White Board
5	25	Overview of different methods of valuation, including the market value method and the income approach.	White Board
5	26	Calculation of gross and net income, and understanding dual rate interest in valuation.	White Board
5	27	Techniques for rent fixation of buildings and practical examples of financial analysis in valuation.	White Board
5	28	Course recap, review of key concepts, final Q&A, and discussion on practical applications.	White Board

Signature of Faculty: **Signature of HOD**

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Assignment – 1
B. TECH 3rd – YEAR (VI SEM.)
Subject: - *Estimation & Costing*

1. Explain what is detailed estimate?
2. What are the various factors involved in finalizing the rate of an item?
3. What do you understand by CSR?
4. Explain the Long wall – Short Wall method and Centre line method with Formulas and Compare them

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Assignment – 2
B. TECH 3rd – YEAR (V SEM.)
Subject: - *Estimation & Costing*

1. Explain the types of estimates?
2. Discuss importance of estimation and costing
3. What is purpose of rate analysis?
4. Analysis the rate of M-20 grade of RCC excluding centering & shuttering
5. What do you mean by sinking fund?
6. Explain what is detailed estimate?

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SAMPLE QUIZ QUESTIONS

1) **To make out an estimate for a work the following data are necessary Drawing, Specification and** ……
a) materials
b) rates
c) labors
d) transportation
Answer: (b)

2)…**……is required for preliminary studies of various aspects of a work or project.**
a) Supplementary Estimate
b) Plinth Area Estimate
c) Revised Estimate
d) Abstract Estimate
Answer: (d)

3) **Approximate cost of a hostel building for 100 students @Rs 10000/- per student works out as Rs. 10 lakhs.**
a) True
b) False
Answer: (a)

4) **Cube rate estimate is less accurate as compared to the plinth area estimate as the height of the building is also compared.**
a) False
b) True
Answer: (b)

5) **In this method approx. total length of walls is found in running meter and this total length multiplied by the rate per running meter of wall gives a fairly accurate cost.**
a) Annual repair
b) Item rate estimate
c) Approximate quantity method estimate
d) Cubical content estimate
Answer: (c)

6) **A large work or project may consist of several building or small works and each of these works is known as**
a) sub-work
b) sub-project
c) sub-head
d) sub-construction
Answer: (a)

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TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR
B. TECH III YEAR (VI SEM.) – MT-I (APRIL'24) ESTIMATION & COSTING
(6CE4-05)

Time: 3 Hr **Max. Marks:** 70

Note:

1. The paper is divided into 2 parts: Part-A and, Part-B.
2. Part-A contains 10 questions and carries 2 mark each.
3. Part-B contains 5 questions. Each question is having two options and carries 10 marks each.

SECTION A (WORD LIMIT 25 WORDS)		
a	What are the types of Estimates? Discuss briefly.	CO1
b	What do you mean by Cubic content estimate?	CO1
c	Define the term "Technical Sanction and measurement book".	CO1
d	What are Contractor profit and overhead charges.?	CO1
e	Prepare a sample measurement sheet of an Abstract Estimates.	CO2
f	Explain Bill of Quantities.	CO2
g	Explain freehold and leasehold properties.	CO2
h	What is the purpose of rate Analysis	CO2
i	Explain Schedule of rates?	CO3
j	Define Plinth Area, Carpet Area, and Contingencies.	CO3
SECTION B (WORD LIMIT 200-300 WORDS)		
1	What are the types of estimates? How do they differ from each other? Which of the methods can gives us exact cost and why?	CO1
	or	
	Define Mustor Roll.	
2	Prepare a preliminary estimate of a multi storey office building having a carpet area of 2200 sqm and 35% of built up area will be taken up by corridors, verandah, staircase etc. And 1% of built up area will be occupied by walls.	CO1
	or	
	Analysis the rate of M-15 grade R.C.C. (Assume Suitable Data)	

3	Prepare a preliminary estimate of a polytechnic building for 800 students in order to assess the amount of fund, based on following particulars: Carpet area per student= 1.20 sqm. 1) Area of corridor, verandah, staircase etc= 20% 2) Area of walls =15% of the plinth area 3) Plinth area rate = 3500 sqm 4) Cost of water supply = 5% of building cost 5) Cost of sanitation, electric and others are 7%, 12% and 3% of total building cost respectively. 6) Contingencies and establishment charges = 5% and 2.5% of total building cost	CO2
	or	
	Various Factor Influence the Accuracy of estimate	
4	Explain Revise estimate and Supplementary estimate.	CO2
	or	
	Write Purpose and importance of estimate.	
5	Explain the term “Tender”	CO3
	or	
	Analyze the rate of following item or work for “First class brick work in 1:6 cement sand mortar.”	

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Marks and Gap Analysis of Mid-Term I

S.No.	University Roll No.	Name of Student	Mid-Term 1 MM-70	Remark (Remedial Class need or not – Y/N)
1.	21ETCCE001	Dev vaishnav	50	N
2.	21ETCCE002	Hitesh Sutradhar	50	N
3.	21ETCCE004	Naved khan	52	N
4.	21ETCCE006	Pushpendra gehlot	58	N
5.	21ETCCE007	Shalin Dak	47	N
6.	21ETCCE009	Tamanna kumawat	54	N
7.	21ETCCE300	Muniraj Sharma	63	N
8.	22ETCCE200	Moiz Udaipurwala	50	N
9.	22ETCCE201	Vikas Suthar	52	N

*****(Y, if obtained marks are <50%)

Signature of Faculty: **Signature of HOD**

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Remedial Action Taken to Remove the Gaps (After Mid- Term 1)

S.no.	University Roll no.	Name of Student	Topics to be discussed in Remedial Class	Schedule Date of Remedial Class	Outcome Achieved
1.	NIL				
2.					

Signature of Faculty: **Signature of HOD**

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Mid Term Paper-II

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR

B. TECH III YEAR (VI SEM.) – MT-II

ESTIMATION & COSTING (6CE4-05)

Time: 3 Hr **Max. Marks:**70

Note:

1) The paper is divided into 2 parts: Part-A and, Part-B.
2) Part-A contains 10 questions and carries 2 mark each.
3) Part-B contains 5 questions. Each question is having two options and carries 10 marks each.

Part- A (20 Marks)

A.	What are the types of Estimates? Discuss briefly.	CO1
B.	Define the term "Technical Sanction and measurement book".	CO1
C.	Prepare a sample measurement sheet of an Abstract Estimates.	CO2
D.	Explain Bill of Quantities.	CO2
E.	Explain Schedule of rates?	CO3
F.	Define Plinth Area, Carpet Area, and Contingencies.	CO3
G.	Write Short Note on Administrative Approval	CO4
H.	What are Factor to be consider for preparation of detail estimate	CO4
I.	Write a Short Note on outgoing.	CO5
J.	Write a Short Note on obsolescence.	CO5

Part- B (50 Marks)

1. Define Mustor Roll.	CO1
OR	
1. Analysis the rate of M-20 grade R.C.C. (Assume Suitable Data)	CO1

2. Explain Revise estimate and Supplementary estimate.	CO2
OR	
2. Write Purpose and importance of estimate.	CO2

3. Explain the term "Tender"	CO3
OR	
3. Analyze the rate of following item or work for "First class brick work in 1:6 cement sand mortar"	CO3

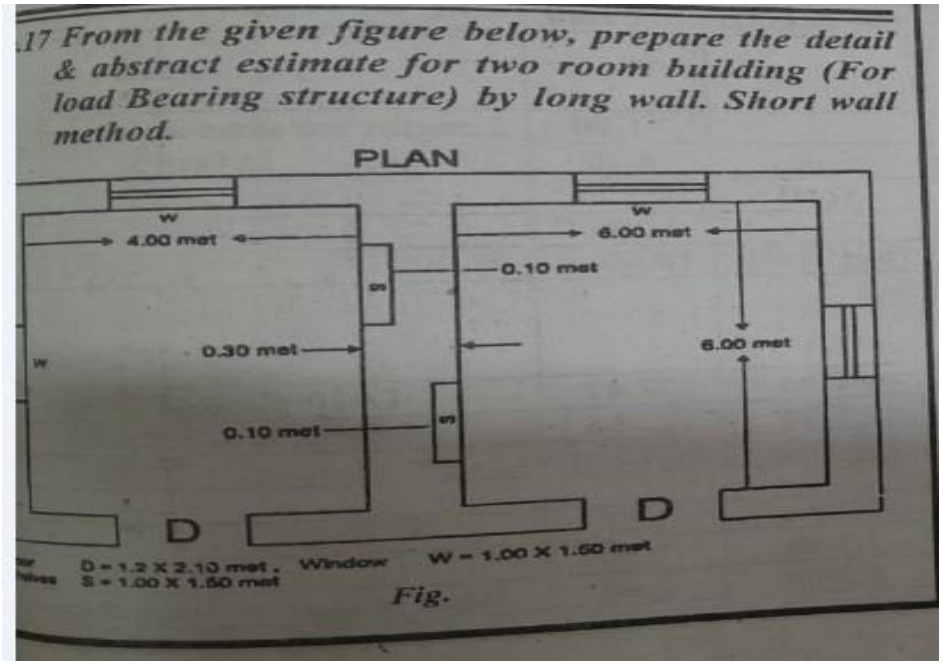
4. Prepare a detail estimate for earth work for a portion of a Road from Following Data

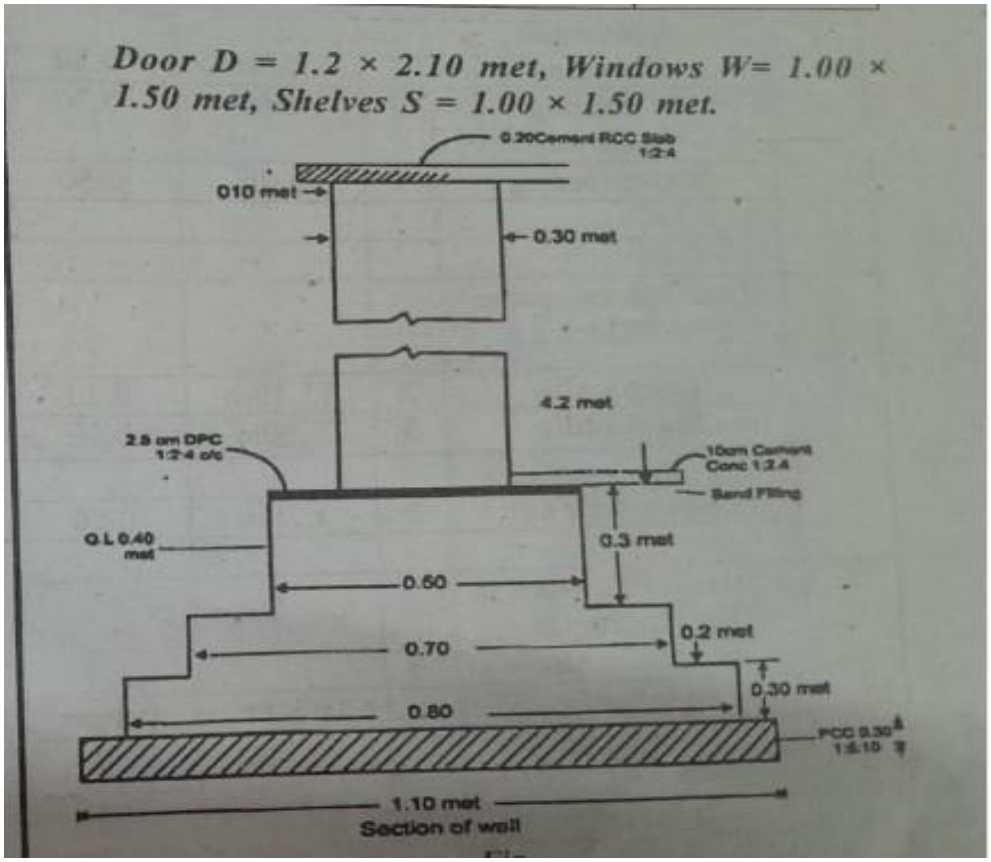
CO4

Chainage	Rl of Ground	Rl of Formation	Gradient
0	114.50	115	UPWARD GRADIENT (1:200) up to 600 m.
100	114.75		
200	114.25		
300	115.20		
400	116.10		
500	116.85		
600	118		
700	118.25		DOWNWARD GRADIENT (1:40)
800	118.10		
900	117.80		
1000	117.75		
1100	117.90		
1200	117.50		

The Formation width of Road 10m.
Side Slope 2:1 (Banking) & 1.5:1 (Cutting)
Draw Longitudinal section of the road & a typical cross section and prepare an estimate of the earth work for the road at the rate of rs 485 per cubic meter in banking.
rate of rs 385 per cubic meter in Cutting.

OR

4.	 .17 From the given figure below, prepare the detail & abstract estimate for two room building (For load Bearing structure) by long wall. Short wall method. PLAN W 4.00 met 0.10 met W 6.00 met 0.30 met 6.00 met 0.10 met D D D = 1.2 X 2.10 met , Window W = 1.00 X 1.50 met S = 1.00 X 1.50 met Fig.	CO4


Door D = 1.2 × 2.10 met, Windows W= 1.00 × 1.50 met, Shelves S = 1.00 × 1.50 met.
0.20Cement RCC Slab 1:2:4
010 met
0.30 met
4.2 met
2.5 cm DPC 1:2:4 c/c
10cm Cement Conc 1:2:4
Sand Filling
G.L 0.40 met
0.3 met
0.60
0.2 met
0.70
0.30 met
0.80
PCC 0.30 1:5:10
1.10 met
Section of wall

5. What do you mean by depreciation? Explain four major method of calculating depreciation	CO5
OR	
5. Describe the purpose of valuation and different method of valuation.	CO5

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Marks and Gap Analysis of Mid-Term II

S.No.	University Roll No.	Name of Student	Mid-Term 2 MM-70	Remark (Remedial Class need or not – Y/N)
1.	21ETCCE001	Dev vaishnav	49	N
2.	21ETCCE002	Hitesh Sutradhar	49	N
3.	21ETCCE004	Naved khan	51	N
4.	21ETCCE006	Pushpendra gehlot	57	N
5.	21ETCCE007	Shalin Dak	46	N
6.	21ETCCE009	Tamanna kumawat	53	N
7.	21ETCCE300	Muniraj Sharma	62	N
8.	22ETCCE200	Moiz Udaipurwala	49	N
9.	22ETCCE201	Vikas Suthar	51	N

*****(Y, if obtained marks are <50%)

Signature of Faculty: **Signature of HOD**

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Remedial Action Taken to Remove the Gaps (After Mid- Term 1I)

S.no.	University Roll no.	Name of Student	Topics to be discussed in Remedial Class	Schedule Date of Remedial Class	Outcome Achieved
1.	NIL				
2.					

Signature of Faculty: **Signature of HOD**

Techno India NJR Institute of Technology

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Model Question Paper

4E4116

Roll No. _____ Total No of Pages: 4

4E4116

B.Tech. IV-Sem (Main & Back) Exam; June-July 2016

Civil Engineering

4CE6A Quantity Surveying &Valuation

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks (Main & Back): 26

Min. Passing Marks (Old Back): 24

Instructions to Candidates:-

*Attempt any **five questions**, selecting **one question** from **each unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No.205)

1. NIL 2. NIL

UNIT-I

Q.1 Discuss the importance of quantity survey and valuation techniques in civil construction projects. [16]

OR

Q.1 (a) What do you mean by 'Supplementary Estimates'? Explain the circumstances under which such estimates are prepared. [8]

(b) Describe various factors that influence the accuracy of estimates of building construction project. [8]

UNIT-II

Q.2 (a) Write the purposes of 'Rate Analysis'. [6]

(b) Analyze the rate of 12 mm thick 1: 4 cement and local sand mortar plaster on brick wall including material, labour T and P, watering etc. [10]

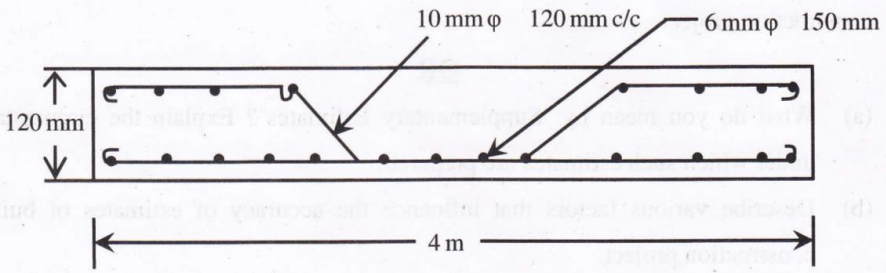
OR

Q.2 (a) Write detail note on various factors affecting the Rate Analysis. [6]

(b) Analyze the rate of following item or work (assume suitable data e.g. rates of material and labour etc.) for "First class brick work in 1:6 cement sand mortar". [10]

UNIT-III

Q.3 Prepare a details estimate of the quantities of concrete and steel of R.C.C. slab of overall dimensions 4m × 8.5m having an overall depth of 120mm. 10mm diameter main bars are spaced at 120mm centers with alternate bars bend up at 1/5 span. 6mm diameter distribution steel is provided at 150mm centers. Cross section of slab is shown in Figure. Prepare bar bending schedule. Separately. [16]



OR

Q.3 Calculate the quantity of earthwork for a portion of a road from the following data. [16]

Formation width of road = 10m

Side slope = 2 : 1

Assume there is no transverse slope

Use prismoidal formula

Distance in M	0	100	200	300	400	500	600
R.L. of ground	114.50	114.75	115.25	115.20	116.10	116.85	118
R.L. of formation	115	Upward Gradient 1 : 200					

UNIT-IV

Q.4 (a) Explain with an example the procedure for working out the cost of materials at site. [6]

(b) Differentiate between an ordinary cash book and subsidiary cash book. What certificate is required to be given at the time of closing of a cash book? [10]

OR

Q.4 Write short notes on the following: [4×4=16]

(a) Work charge establishment

(b) Travelling allowance

(c) Measurement Book

(d) Contingencies

UNIT-V

Q.5 (a) Write down the purpose of valuation. [4]

(b) Explain 6 major types of outgoings. [4]

(c) Explain year's purchase and sinking fund. [8]

OR

Q.5 (a) What do you mean by depreciation? Explain four major methods of calculating depreciation. [6]

(b) A three storey building is standing on a plot of land measuring 800 Sq.m. The plinth area of each storey is 400 Sq.m. The building is of RCC framed structure and the future life may be taken as 70 years. The building fetches a gross rent of Rs. 1500 per month. Work out the capitalized value of the property on the basis of 6% net yield. For sinking fund 3% compound interest may be assumed. Cost of land may be taken as Rs 40 per Sq.m. Other data required may be assumed suitably. [10]

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STUDENT PERFORMANCE REPORT

Roll No.	Name of Student	I Mid-Term	II Mid-Term	Average
21ETCCE001	Dev vaishnav	50	49	49.5
21ETCCE002	Hitesh Sutradhar	50	49	49.5
21ETCCE004	Naved khan	52	51	51.5
21ETCCE006	Pushpendra gehlot	58	57	57.5
21ETCCE007	Shalin Dak	47	46	46.5
21ETCCE009	Tamanna kumawat	54	53	53.5
21ETCCE300	Muniraj Sharma	63	62	62.5
22ETCCE200	Moiz Udaipurwala	50	49	49.5
22ETCCE201	Vikas Suthar	52	51	51.5

Signature of Faculty: **Signature of HOD**

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RESULT ANALYSIS

S.NO.	RTU ROLL NUMBER	NAME OF STUDENT	END TERM MARKS	SESSIONAL MARKS	TOTAL
		MAX MARKS	**70**	**30**	**100**
1.	21ETCCE001	Dev vaishnav		22	
2.	21ETCCE002	Hitesh Sutradhar		22	
3.	21ETCCE004	Naved khan		23	
4.	21ETCCE006	Pushpendra gehlot		26	
5.	21ETCCE007	Shalin Dak		21	
6.	21ETCCE009	Tamanna kumawat		24	
7.	21ETCCE300	Muniraj Sharma		28	
8.	22ETCCE200	Moiz Udaipurwala		22	
9.	22ETCCE201	Vikas Suthar		23	

TOTAL	PASS	FAIL	ABSENT	PASS %
9	N/A	N/A	N/A	N/A

Indirect Assessment:

Overall Teacher Self-Assessment (at the completion of course) in terms of course objective and outcomes

Course Objectives:

This course equips students with essential skills in estimating and costing for civil engineering projects. Students will learn to prepare various types of estimates, conduct rate analysis, and develop detailed cost assessments for buildings, infrastructure, and services. The course also covers valuation techniques, including depreciation and rent fixation, enabling students to manage project costs effectively and make informed financial decisions.

Course Outcomes:

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

CO1: Identify and define key concepts related to estimation, costing, and valuation in civil engineering.

CO2: Explain the principles of estimating and rate analysis, and describe their applications in various civil engineering projects.

CO3: Utilize standard methods to calculate quantities, prepare estimates, and perform rate analyses for different construction activities.

CO4: Examine and differentiate between various types of estimates and rate analysis techniques to determine their appropriateness for specific projects.

CO5: Develop detailed and accurate estimates and cost analyses for civil engineering projects, integrating industry standards and financial considerations.

Methodology to identify bright student

It is done by considering a range of criteria, including academic performance, creativity, critical thinking, problem-solving skills, and enthusiasm for learning. Bright students often excel in multiple areas. Observed how students perform in the classroom. In terms of active participation, engagement in discussions, leadership, and the ability to grasp complex concepts.

Efforts to keep students engaged

1. **Active Learning:** Incorporate active learning strategies, such as group discussions, problem-solving activities, and hands-on projects. Active participation keeps students engaged and encourages critical thinking.
2. **Varied Teaching Methods:** Use a variety of teaching methods, including lectures, group work, multimedia presentations, and interactive activities to cater to different learning preferences.
3. **Technology Integration:** Leverage technology, such as online platforms, educational apps, and interactive software, to make lessons more engaging and interactive.

Methodology to identify weak student

It is done by considering a range of criteria, including classroom observation, formative assessment, summative assessment, assignment review etc. Weak students are struggling students with sensitivity and a desire to support their learning. Some measures, such as additional tutoring, personalized assignments, or alternative assessment methods, to help students succeed.

Targeted inventions for weak student

1. Additional Resources

Offer supplementary learning materials, such as textbooks, online resources, or multimedia content, to provide alternative explanations and reinforce key concepts.

2. Remedial classes

Establish a tutoring program where students can receive extra help from teachers.

3. Flipped classroom

Students are assigned pre-class learning materials, often in the form of videos, readings, or online modules, to cover the foundational concepts before coming to class.