

Course File

***Subject Title/Subject Code: BUILDING MATERIALS AND CONSTRUCTION
3CE4-07***

Semester: III Year: II

Name of the Faculty: Mr. Rakesh Yadav

E-mail id: rakesh.yadav@technonjr.org

Class Schedule

Total Number of Lectures: 42

i) Course Objective

To familiarize students with the fundamental properties, types, and applications of essential civil engineering materials and construction techniques. It aims to develop their ability to select and apply appropriate materials in various structural and construction projects.

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Techno India NJR Institute of Technology

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VISSION & MISSION OF INSTITUTE

Vision

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.

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.

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).

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.

COURSE OUTCOMES (COs) OF THE SUBJECT

CO No.	Mapping	Statement
CO35301.1	Understanding	Understand the properties, classifications, and uses of basic civil engineering materials such as stone, bricks, timber, steel, and concrete.
CO35301.2	Analyzing	Analyze and select appropriate construction materials based on their performance characteristics for different civil engineering applications.
CO35301.3	Understanding	Demonstrate knowledge of various masonry, mortar, and plastering techniques, and their application in building construction.
CO35301.4	Understanding	Understand the principles and methods involved in foundation design, damp proofing, and site preparation for construction projects.
CO35301.5	Applying	Apply technical knowledge of building components, roofing systems, and structural elements such as stairs, arches, and lintels in real-world construction scenarios.

COS MAPPING WITH POs AND PSOs

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	0	0	0	0	1	3	0	0	0	1	0	1	1	1
CO2	1	0	0	0	0	1	3	0	0	0	1	0	1	1	1
CO3	1	0	0	0	0	1	3	0	0	0	1	0	1	1	1
CO4	1	0	0	0	0	1	3	0	0	0	1	0	1	1	1
CO5	1	0	0	0	0	1	3	0	0	0	1	0	1	1	0

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UNIVERSITY ACADEMIC CALENDAR

Academic Calendar for odd Semester for Session

RAJASTHAN TECHNICAL UNIVERSITY KOTA				
Course: Bachelor of Technology (B.TECH.) for Odd Semester				
Semester	I	III	V	VII
Induction Program	17.08.2023			
Commencement of Classes	11.09.2023	24.08.2023	04.09.2023	04.09.2023
Commencement of First Mid Term	02.11.2023	03.10.2023	05.10.2023	05.10.2023
Commencement of Second Mid Term	07.12.2023	16.11.2023	20.11.2023	20.11.2023
Last Working Day	23.12.2023	02.12.2023	02.12.2023	30.11.2023
Commencement of Practical Exams	02.01.2024	04.12.2023	23.12.2023	14.12.2023
Commencement of Theory Exams	18.01.2024	14.12.2023	08.12.2023	07.12.2023
Winter Break				

ACADEMIC CALENDAR OF INSTITUTE

Academic Calendar

Academic Calendar for Odd Semester for Session 2023-24 (Odd Semester)

Course: Bachelor of Technology (B.TECH.)				
Semester	I	III	V	VII
Induction Program	10-08-2023			
Commencement of Classes	20-08-2023	11-09-2023	30-08-2023	22-08-2023
Commencement of First Mid Term	04-11.2023	02-11.2023	02-11.2023	27-09-2023
Commencement of Second Mid Term	15-01-2024	27-12-2023	27-12-2023	05-12-2023
Last Working Day	20-01-2024	12-01-2024	12-01-2024	20-12-2023
Commencement of Practical Exams	29-01-2024	15-01-2024	15-01-2024	31-12-2023
Commencement of Theory Exams	15-02-2024	30-01-2024	29-01-2024	27-12-2023

Evaluation Scheme

FACULTY DETAILS:

Name of the Faculty : Rakesh Yadav
Designation : Assistant Professor

Department : Civil Engineering

1. TARGET

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

2. METHOD OF EVALUATION

- Continuous Assessment Examinations (Mid-Term 1, Mid-Term 2)
 Assignments / Seminars
 Mini Projects
 Quiz
 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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RAJASTHAN TECHNICAL UNIVERSITY, KOTA

SYLLABUS

II Year - III Semester: B.Tech. (Civil Engineering)

3CE4-07: BUILDING MATERIALS AND CONSTRUCTION

Credit: 3
3L+0T+0P

Max. Marks: 150 (IA:30, ETE:120)
End Term Exam: 3 Hours

SN	Contents	Hrs.
1	Introduction to objective, scope and outcome of the course.	1
2	Basic Civil Engineering Materials (Properties, Types and Uses): Stone: Compressive strength, Water absorption, Durability, Impact value, Tensile strength; Bricks: Water absorption, Compressive strength, Effloresces, Dimension and Tolerance; Tiles: Water absorption, Tolerance, Impact value and Glazing; Light weight concrete blocks. Lime: classification as per IS, properties, standard tests and uses in construction. Fly-ash: Properties and Use in manufacturing of bricks & cement; Miscellaneous: Gypsum, Plaster of Paris, PVC materials, Paints, Varnish and Distemper.	8
3	Timber & Steel: Timber: Definitions of related terms, Classifications and Properties, Defects in Conversion of wood, Seasoning wood, Preservation, Fire proofing, Ply woods, Fibre boards; Steel: Mild steel and HYSD steel, Properties and their use, common tests on steel.	3
4	Mortar and Plaster: Mortar preparation methods: Functions and tests & their uses in various types of pointing & plastering	2
5	Brick and Stone Masonry: Basic principle of masonry work, different types of bonds, relative merits and demerits of English, Single Flemish and Double Flemish bond. Comparison between stone and brick masonry. General principles, classification of stone masonry and their relative merits and demerits.	4
6	Building Requirements & Construction System: Building components, their functions and requirements. Types of construction: load bearing and framed structure construction, RCC beam, column and slab construction, Precast and In-situ construction, Relative merits and demerits. Fire resistance construction, FRC. Ground & Upper floors: Floor components and their functions, Floor types and Selection of flooring, construction details of ground and upper floors, merits and demerits.	7
7	Foundation & Site Preparation: Purpose, types of foundation: like shallow, deep, pile, raft, grillage foundation and their suitability. Depth of foundation, Sequence of construction activity and coordination on site clearance, layout of foundation plan.	5

Scheme of 2nd Year B. Tech. (CE) for students admitted in Session 2017-18 onwards.

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RAJASTHAN TECHNICAL UNIVERSITY, KOTA

SYLLABUS

II Year - III Semester: B.Tech. (Civil Engineering)



	Temporary structures: Types & methods of shoring, underpinning and scaffolding.	
8	Damp Proofing: Causes and Effects of dampness, Methods and materials for damp proofing, Methods and materials for anti-termite treatment. Construction and Expansion Joints: Requirements, Types material used, Construction details.	3
9	Arches and Lintels: Terms used, types of arches and their construction detail, types of lintels and constructions. Partition Wall: Types, purpose and use of partition wall.	3
10	Stairs: Terms used, requirements of good staircase, classification, construction details and suitability of different types of stairs, Lifts and Ramps.	2
11	Roof and Roof Covering: Purposes, classification of roofs, terms used. Introduction to Solid slab, Flat slab, Shell Roofs and Pitched roofs, and their constructional features. Types of pitched roofs and Trusses, typical constructional details; Roof covering materials, types and typical constructional details.	4
	Total	42

Office of Dean Academic Affairs
Rajasthan Technical University, Kota

Scheme of 2nd Year B. Tech. (CE) for students admitted in Session 2017-18 onwards.

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PRESCRIBED BOOKS

1. Building Material and Construction, Saurabh kumarsoni, S.K. Kataria& Sons.
2. Building Materials: Products, Properties and Systems by ML Ghambir, Tata Mc Graw Hill
3. Engineering Materials by S. C. Rangwala, Charotar Publishing House Pvt. Limited

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WEEKLY TIME TABLE OF THE TEACHER

First Time Table: with effect from (Date): 21/09/2023

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

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COURSE-PLAN

UNIT	Lect. No.	TOPICS	Teaching Methods/ Teaching Aids
1	1	INTRODUCTION: Objective, scope and outcome of the course	White Board
2	2	BASIC CIVIL ENGINEERING MATERIALS (PROPERTIES, TYPES AND USES): Stone: Students should be able to understand Compressive strength, Water absorption, Durability, students will able to compute Impact value, Tensile strength	White Board
2	3	Bricks: Students will able to compute Water absorption, compressive strength of bricks	White Board
2	4	Students should be able to compute Compressive strength, Effloresces, Dimension and Tolerance	White Board
2	5	Tiles: Students will able to compute Impact value, Tensile strength compute Compressive strength Water absorption, Tolerance, Impactvalue Students should be able to identify Light weight concrete blocks	White Board
2	6	Lime: Students should be able to understand of classification as per IS, properties, standard tests and uses in construction	White Board
2	7	Fly-ash: Students should be able to understand Properties and Use in manufacturing of bricks & cement	White Board
2	8	Miscellaneous: Students should be able to identify Gypsum, Plaster of Paris	White Board
2	9	Students should be able to understand PVC materials, Paints, Varnish and Distemper	White Board
3	10	TIMBER & STEEL: Timber: Students should be able to understand definitions of related terms, Classifications and Properties, defects in Conversion of wood	White Board
3	11	Students should be able to understand Seasoning wood, Preservation, Fire proofing, Ply woods, Fiber boards	White Board
3	12	Steel: Students should be able to identify Mild steel and HYSD steel, relate Properties and their use, Students should be able to perform common tests on steel	White Board
4	13	MORTAR AND PLASTER: Students should able to attain knowledge of Mortar preparation methods	White Board
4	14	Students should be able to identify Functions and their uses in various types of pointing & plastering, also able to perform tests	White Board
5	15	BRICK AND STONE MASONRY: Students should be able to understand	White Board

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		Basic principle of masonry work and different types of bonds	
5	16	Students should be able to compare merits and demerits of English, Single Flemish and Double Flemish bond	White Board
5	17	Students should be able to construct a masonry construction project	White Board
5	18	Students should be able to classify of stone masonry and relate their merits and demerits	White Board
6	19	BUILDING REQUIREMENTS & CONSTRUCTION SYSTEM: Students should be able to understand Building components, their functions and requirements	White Board
6	20	Types of construction: Students should be able to understand load bearing and framed structure construction	White Board
6	21	Students should be able to identify RCC beam, column and slab construction	White Board
6	22	Precast and In-situ construction, Relative merits and demerits. Fire resistance construction, FRC	White Board
6	23	GROUND & UPPER FLOORS: Students should be able to understand Floor components and their functions	White Board
6	24	Students should be able to understand floor types and Selection of flooring	White Board
6	25	Construction details of ground and upper floors, merits and demerits	White Board
7	26	FOUNDATION & SITE PREPARATION: Students should be able to understand Purpose, types of foundation: like shallow, deep	White Board
7	27	Students should be able to identify Pile, raft, grillage foundation and their suitability	White Board
7	28	Students should be able to compute depth of foundation, sequence of construction activity and co-ordination, and prepare layout of foundation plan	White Board
7	29	TEMPORARY STRUCTURES: Students should be able to classify methods of shoring	White Board
7	30	Students should be able to attain knowledge of Underpinning and scaffolding	White Board
8	31	DAMP PROOFING: Students should be able to identify Causes and Effects of dampness, and should able to classify Methods and materials for damp proofing	White Board
8	32	Methods and materials for anti-termite treatment	White Board
8	33	CONSTRUCTION AND EXPANSION JOINTS: Students should be able to select Type's material used and Construction	White Board

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		details	
9	34	ARCHES AND LINTELS: Students should be able to understand terms used for arche construction	White Board
9	35	Students should be able to identify Arch construction detail,	White Board
9	36	Students should be able to classify types of lintels and constructions.	White Board
10	37	STAIRS: Students should be able to understand terms used, requirements of good staircase	White Board
10	38	Students should be able to prepare construction details and suitability of different types of stairs	White Board
11	39	ROOF AND ROOF COVERING: Students should be able to understand Purposes, of covered roofs and related terms	White Board
11	40	Students should be able to understand of Solid slab, Flat slab, Shell Roofs and Pitched roofs	White Board
11	41	Students should be able to compare in pitched roofs and Trusses,	White Board
11	42	Students should be able to identify Roof covering materials, and typical constructional details	White Board

Signature of Faculty:

Signature of HOD

Assignment – 1

1. What is the role of gypsum in manufacturing cement.
2. Classifications of steel and its properties.
3. Write the types of rocks and explain its texture.
4. Explain in Brief about “Dressing of Stones”.
5. Properties of ceramic tiles and its importance.
6. What is the Fly ash Brick? Explain various tests to be conducted on Bricks.
7. What is the ‘quick lime’? Explain various tests to be conducted on lime.
8. Explain the good quality of a building stones.
9. What is the gypsum plaster? Write down the advantages and disadvantages of it.
10. What is the role of fly ash in concrete? Discuss the uses of fly ash in constructions.

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Assignment – 2

1. What are the purposes of different foundations?
2. Write down the Causes and effects of Dampness.
3. Write a note of “termites and their attack” on buildings.
4. Classify various types of lintels and discuss their relative use.
5. State briefly the requirement of a good stair case.
6. Classification of partition wall, Enumerate purpose of partition wall.
7. Compare merits and demerits of flat and pitched roof.
8. Write about various the components of building and their functions.
9. Describe the various methods of damp proofing.
10. Explain the types of joints in construction with their neat sketch.

SAMPLE QUIZ QUESTIONS

1. In a mortar, the binding material is
 - a) Cement
 - b) sand
 - c) surkhi
 - d) cinder

2. Which of the following provides ultimate strength to the cement?
 - b) Pure Gypsum b) Quartz Sand
 - c) Magnetite d) Granite

3. Crushing strength of a first class brick should not be less than
 - a) 3.5 N/mm² c) 7.0 N/mm²
 - b) 10.5 N/mm² d) 14.0 N/mm²

4. Gypsum is a
 - a) Mechanically formed sedimentary rock
 - b) Igneous rock
 - c) Chemically precipitated sedimentary rock
 - d) Metamorphic rock

5. In brick masonry the bond produced by laying alternate headers and stretchers in each course is known as
 - a) English bond
 - b) Double Flemish bond
 - c) Zigzag bond
 - d) Single Flemish bond

6. In the cement the compound quickest to react with water, is
 - a) Tri-calcium aluminates
 - b) Tetra-calcium alumino-ferrite
 - c) Tri-calcium silicate
 - d) Di-calcium silicate

7. Excess of silica in brick earth results in
 - a) Cracking and warping of bricks
 - b) Loss of cohesion
 - c) Enhancing the impermeability of bricks
 - d) None of the above

Mid Term Paper-I

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR

B. TECH 2nd – YEAR (III SEM.) – MT-I

BUILDING MATERIAL AND CONSTRUCTION (3CE4-07)

Time: 2 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.	Draw a Standard Brick with dimensions?	CO1
B.	What is role of fly ash in concrete?	CO1
C.	Write the name of different types of bond use in brickwork?	CO1
D.	Write any two comparisons between stone and brick masonry?	CO1
E.	What is role of gypsum in manufacturing of cement?	CO2
F.	What do you understand by dressing of stone?	CO2
G.	List the various types of Rocks?	CO2
H.	Explain relative merits and demerits of Flemish bond?	CO2
I.	What do you understand by term “Tarring”?	CO3
J.	Explain Bethel’s method?	CO3

Part- B (50 Marks)

1.	Explain the engineering Characteristics of a good building stone	CO1
OR		
1.	What are the different laboratory test which are performed of a stone? Discuss crushing strength test.	CO1
2.	State and discuss different method of seasoning of timber	CO1
OR		
2.	What are Characteristics of a good timber	CO1
3.	What is mortar? Briefly describe lime and cement mortar. State the role of sand in mortar.	CO2
OR		
3.	What are characteristic of lime? Discuss IS classification of lime?	CO2
4.	Explain various type of stone masonry.	CO2
OR		
4.	Explain the different bond used in brick masonry?	CO2
5.	Explain the types of foundation used I in building. Sketch and explain their suitability	CO3
OR		
5.	Discuss the load bearing and framed structure of construction in detail	CO3

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.	22ETCCE001	ANKIT KUMAR	54	N
2.	22ETCCE002	ARMAAN CHAUHAN	43	N
3.	22ETCCE003	AYUSH SINGH JHALA	47	N
4.	22ETCCE004	PARIDHI NINAMA	61	N
5.	22ETCCE005	PRAVEEN DANGI	54	N
6.	22ETCCE006	ROSHNI TABIYAR	67	N

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

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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

Mid Term Paper-II

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR

B. TECH 2nd – YEAR (III SEM.)

Building Material and Construction (3CE4-07)

Time: 3 Hr

Max. Marks: 70

Note:

- 1) The paper is divided into 2 parts: Part-A, Part-B and Part-C.
- 2) Part-A contains 10 questions and carries 2 mark each.
- 3) Part-B contains 7 questions. Each question carries 4 marks each. Attempt any 5 Questions
- 4) Part-C contains 5 questions. Each question carries 10 marks each. Attempt any 3 Questions

Part- A (20 Marks)

A.	What do You understand by the dressing of stone?	CO1
B.	Define Engineering Bricks and Mention two mechanical property of Engineering brick	CO1
C.	What do You understand by the Defect of Timber? Explain Any Two	CO2
D.	Differentiate between Mild stell and HYSD bars	CO2
E.	Write the name of different type of bond use in brickwork	CO3
F.	What are common Rock forming minerals	CO3
G.	Write down causes of dampness	CO4
H.	What is load bearing structure used in building construction	CO4
I.	What do you understand by tread and rise?	CO5
J.	Classify different type of staircase	CO5

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Part- B (20 Marks)

1. Explain Various test to be Conducted on bricks	CO1
2. Write Classification of stone according to engineering requirement.	CO1

3. Explain the role of fly ash in manufacturing of cement.	CO2
4. Explain causes of Failure of Foundation.	CO3

5. What are Different causes of dampness in buildings?	CO3
6. Discuss Different method of Seasoning of timber?	CO4

7. Differentiate between Lintel and Arch.	CO5
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Part C (30 Marks)

1. Explain Proportion and function of ingredient of good brick	CO1
2. What are the major types of foundation used in Building? Sketch and explain their suitability?	CO2
3. State Various Components of building? Discuss functional requirements of Superstructure?	CO3
4. Explain Different Types of Stone masonry. Also Describe relative merit and Demerit	CO4
5. Explain Requirement of Good Staircase	CO5

Marks and Gap Analysis of Mid-Term II

S.No.	University Roll No.	Name of Student	Mid-Term II MM-70	Remark (Remedial Class need or not – Y/N)
1.	22ETCCE001	ANKIT KUMAR	53	N
2.	22ETCCE002	ARMAAN CHAUHAN	42	N
3.	22ETCCE003	AYUSH SINGH JHALA	46	N
4.	22ETCCE004	PARIDHI NINAMA	60	N
5.	22ETCCE005	PRAVEEN DANGI	53	N
6.	22ETCCE006	ROSHNI TABIYAR	66	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
(Approved by AICTE, New Delhi and Affiliated to Rajasthan Technical University Kota (Raj.))
Model Question Paper

3E1211	Roll No. _____	Total No. of Pages : 2
<div style="border: 1px solid black; display: inline-block; padding: 5px; margin: 5px;">3E1211</div> <p>B.Tech. III Sem. (Main) Examination, April/May - 2022 Civil Engg. 3CE4-07, Building Materials and Construction</p>		

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Attempt all ten questions From Part A, All five Questions from Part B and three questions out of five questions from Part C .

Schematic diagrams must be shown wherever necessary. Any data missing may suitably be assumed and stated clearly Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (As mentioned in form No.205)

PART - A(Word limit 25)

1. Draw a standard Brick with dimensions? (10×2=20)
2. What are the major classifications of stones? Give 2 examples in each?
3. What do you mean by Decay of Timber?
4. Write down the causes of dampness?
5. What is load bearing structure use in building construction?
6. What is Ashlar masonry?
7. List the various types of Roofs?
8. Enumerate the different name of foundation?
9. Differentiate between Headers and stretchers in brick bonds?
10. What are the different methods of plastering?

PART - B(Word limit 100)

1. What are the characteristics of a good timber? Define seasoning of timber.(5×4=20)
2. What are the various types of floors? Explain the utility of any two.
3. Explain causes of failure of foundation?
4. What are different tools required in the process of blasting and explain the process of blasting with neat sketches?
5. Differentiate between English and Flemish bond of brick masonry?

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PART - C (Any three)

(3×10=30)

1. What are the tests to which a stone should be subjected before it is selected for building purpose?
 2. What are the major types of foundations used in buildings? Sketch and explain their suitability?
 3. A hospital building is under construction. Being a civil Engineer, what are the various building services you have to keep in mind for the hospital building?
 4. Explain the requirements of good staircase. Describe the suitability of different types of stairs?
 5. State various component of a building? Discuss the functional requirement of super structures?
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STUDENT PERFORMANCE REPORT

Roll No.	Name of Student	I Mid-Term	II Mid-Term	Average
22ETCCE001	ANKIT KUMAR	54	53	53.5
22ETCCE002	ARMAAN CHAUHAN	43	42	42.5
22ETCCE003	AYUSH SINGH JHALA	47	46	46.5
22ETCCE004	PARIDHI NINAMA	61	60	60.5
22ETCCE005	PRAVEEN DANGI	54	53	53.5
22ETCCE006	ROSHNI TABIYAR	67	66	66.5

Signature of Faculty:

Signature of HOD

RESULT ANALYSIS

S.NO.	RTU ROLL NUMBER	NAME OF STUDENT	END TERM MARKS	SESSIONAL MARKS	TOTAL
		MAX MARKS	70	30	100
1.	22ETCCE001	ANKIT KUMAR	34	24	58
2.	22ETCCE002	ARMAAN CHAUHAN	18	19	37
3.	22ETCCE003	AYUSH SINGH JHALA	44	21	65
4.	22ETCCE004	PARIDHI NINAMA	47	27	74
5.	22ETCCE005	PRAVEEN DANGI	35	24	59
6.	22ETCCE006	ROSHNI TABIYAR	42	30	72

TOTAL	PASS	FAIL	ABSENT	PASS %
6	6	0	0	100%

Indirect Assessment:

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

Course Objectives:

It aims to deepen students' understanding of advanced structural analysis techniques essential for civil engineering. It covers the unit load method for deflection analysis, energy methods for evaluating strain energy under various loading conditions, and the application of Castigliano's theorems to both determinate and indeterminate structures. Students will learn to construct and interpret influence line diagrams, analyze the effects of rolling loads, and study the behavior of arches under different support conditions. Additionally, the course introduces unsymmetrical bending, focusing on the computation of stresses and the location of the shear center. Approximate methods for analyzing multistory frames subjected to lateral loads, as well as the tension coefficient method for space trusses, are also explored. Through this course, students will develop the analytical skills necessary to solve complex structural problems, preparing them for professional practice in civil engineering.

Course Outcomes:

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

CO1: Student will be able to understand the properties, classifications, and uses of basic civil engineering materials such as stone, bricks, timber, steel, and concrete.

CO2: Student will be able to analyze and select appropriate construction materials based on their performance characteristics for different civil engineering applications.

CO3: Student will be able to demonstrate knowledge of various masonry, mortar, and plastering techniques, and their application in building construction.

CO4: Student will be able to understand the principles and methods involved in foundation design, damp proofing, and site preparation for construction projects.

CO5: Student will be able to apply technical knowledge of building components, roofing systems, and structural elements such as stairs, arches, and lintels in real-world construction scenarios.

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:

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- 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 interventions 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.