DEPARTMENT OF CIVIL ENGINEERING

(STRUCTURAL ENGINEERING)

ADVANCED CONCRETE TECHNOLOGY

(COURSE CODE: GR22D5004**)**

I M.TECH - I SEMESTER (YEAR 2022-23)

Dr V.Mallikarjuna Reddy

PROFESSOR

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

HYDERABAD

GokarajuRangaraju Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

Department of Civil Engineering

MATRIX METHODS OF STRUCTURAL ANALYSIS(GR22D5001)

COURSE FILE CHECK LIST

S.No.	Name of the Format	Page
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2.	Time Table	
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8.	Guide lines to study the course books & references, course design & delivery	
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10.	Unit plan/Course Plan	
11.	Evaluation Strategy	
12.	Assessment in relation to COB's and Co's	
13.	Tutorial Sheets	
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16.	Mappings of CO's and Po's	
17.	Model question papers	
18.	Mid-I and Mid-II question papers	
19.	Mid –I marks	
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21.	Sample answer scripts and Assignments	
22.	Course materials like notes, PPT's, Videos etc.,	

DEPARTMENT OF CIVIL ENGINEERING (STRUCTURAL ENGINEERING)

I M. Tech (GR-22) - I Semester **AY: 2022-23** **wef 26-10-2022**

Day/Hour	09:00-10:00	10:00-11:00	11:00-12:00	12:00-01:00	01:00-02:00	02:00-03:00	03:00-04:00	Room No.	
MONDAY	ACT	ACT		LUNCH				Theory/ Tutorial	4203
TUESDAY	ACT							Lab	4205 (SD Lab) /4108&4110(ACT Lab)
WEDNESDAY		ACT						**M.Tech Co-ordinator**	
THURSDAY									
FRIDAY								**Dr. V Srinivasa Reddy (1117)**	
SATURDAY									

Sub. Code	Subjects	Faculty Name	Almanac	
GR22D5001	Matrix methods in structural analysis	Dr. G V V Satyanarayana (842)	1st Spell of Instruction	26-10-2022 to 22-12-2022
GR22D5002	Advanced Solid Mechanics	Dr.V.Srinivas Reddy (Dr.VSR-1117)	1st Mid-term Examinations	23-12-2022 to 29-12-2022
GR22D5004	Advanced Concrete Technology	Dr.V.Mallikarjun Reddy (Dr.VMR-807)	2nd Spell of Instruction	30-12-2022 to 28-02-2023
GR22D5006	Analytical and Numerical methods for Structural Engineering	Mr.V.Naresh Kumar Varma (1359)	2nd Mid-term Examinations	01-03-2023 to 07-03-2023
GR22D5009	Structural Design Lab	Mr.C.Vanadeep (Mr.CV-1645)/Mr.C.Vivek Kumar(1500)/Mrs.P.Sirisha(Mrs.PS-1524)	Preparation	08-03-2023 to 14-03-2023
GR22D5010	Advanced Concrete Technology Lab	Mr.Kusuma Veera Babu (Mr.KVB-1650)/Mr.V.Ramesh(1646)/Mr.PVVSSR Krishna (Mr.PVVSSRK-1562)	End Semester Examinations/ (Theory/ Practicals) Regular/Supplementary	15-03-2023 to 01-04-2023
GR22D5011	Research Methodology and IPR	Dr. Mohammed Hussain(Dr.Mohd.H-861)		
GR22D5153	English for Research Paper Writing	Dr.R.Lakshmi Kanthi (Dr.LRK-718)		

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Name of the Program: M.Tech (Structural Engineering) **Year: I**

Course/Subject: **ADVANCED CONCRETE TECHNOLOGY**
Course Code:GR22D5004

Program Educational Objective's

PEO 1:

Graduates of the program will equip with professional expertise on the theories, process, methods and techniques for building high-quality structures in a cost-effective manner**.**

PEO 2:

Graduates of the program will be able to design structural components using contempory software and professional tools with quality practices of international standards.

PEO 3:

Graduates of the program will be effective as both an individual contributor and a member of a development team with professional, ethical and social responsibilities.

PEO 4:

Graduates of the program will grow professionally through continuing education, training, research, and adapting to the rapidly changing technological trends globally in structural engineering.

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ADVANCED CONCRETE TECHNOLOGY (Professional Elective I)

Course Code: GR22D5004 L/T/P/C: 3/0/0/3 I Year I Semester

Prerequisite: Concrete Technology

UNIT I

Concrete Making Materials: Cement- Bogues compounds – Hydration Process – Alkali silica reaction - Admixtures – Chemical and Mineral admixtures. The chemistry of Portland cement manufacture-Hydration of calcium silicate phases-Hydrated aluminates, ferrite and sulphate phases

UNIT II

Fresh and Hardened Concrete: Fresh Concrete - workability tests on Concrete - Segregation and bleeding. Hardened Concrete: Abram's law- Gel space ratios, Maturity Concept–Stress Behavior–Creep and Shrinkage–Durability tests on concrete- Non-destructive testing of concrete. Microstructure and properties of hardened concrete-Microstructure of concreteStrength

UNIT III

High Strength Concrete –Use of Nano materials – Manufacturing and Properties- Design of HSC Using ErintroyShaklok Method- Ultra High Strength Concrete. High Performance Concrete - Requirements and properties of High Performance Concrete.

UNIT IV

Special Concretes: Self Compacting concrete – Polymer concrete – Fiber reinforced concrete– Reactive Powder concrete – Geopolymer Concrete - Requirements and Guidelines – Advantages and Applications. Light weight concrete, Bacterial concrete. Concrete mix design: - Mix Design method - BIS method, ACI method, DOE method.

UNIT V

Form work for Concrete – materials – structural requirements – form work systems – connections – specifications – slip forms, permanent form work, latest form work– design of form work – shores – removal of forms – reshoring – failure of form work-case studies.

TEXT BOOKS:

1. A.M.Neville, Properties of Concrete, ELBS publications, 4th pointing DECLO,1996.
2. P Kumar Mehta, Paulo J M Monteiro, "Concrete: Microstructure, Properties, and Materials", 4th edition McGraw Hill Education; 2017
3. A.K. Santhakumar, Concrete Technology, Oxford Press,2002.
4. M.S.Shetty, Concrete Technology, S.Chand& Co,2005.

REFERENCE BOOKS:

1. Rajat Siddique, Special Structural concretes, Galgotia Publications, 3rd edition,1994.
2. N.KrishnaRaju, Design of Concrete Mixes, CBS Publications,2014.
3. P.K.Mehta, Concrete: Micro Structure, ICI, Chennai

Course Objectives:

1. To study the physical and chemical properties of cement and admixtures. And also to know about hydration and SEM analysis.
2. To study the properties and conduct the tests on fresh and hardened concrete.
3. To acquire the practical knowledge on mix design principles, concepts and methods.
4. To get an adequate knowledge about the special concretes and their applications in the diverse construction field.
5. To design the forms of different materials for the different types of works under different conditions.

Course Outcomes:

At the end of the course, the student will be able to

1. List out the types of cement, admixture and decide the suitable cement and admixture for specific purpose.
2. Determine the properties of concrete ingredients i.e. cement, fine aggregate and coarse aggregate by conducting different tests such as work ability etc.,
3. Design the mix proportion of ordinary, standard and high strength concrete by using different methods and how the strength of concrete can be modified by changing the proportions.
4. Decide suitable concrete for different structures considering the prevailing weathering conditions and Design economic concrete mix proportion for different exposure conditions and intended purposes with special concrete.
5. Design the forms for a specific work and decide the time of removal of forms for the different elements in different situations.

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Name of the Program: M.Tech (Structural Engineering) **Year: I**

Course/Subject: **ADVANCED CONCRETE TECHNOLOGY**
Course Code:GR22D5004

Programme Outcomes

PO 1: An ability to independently carry out research / investigation and development to solve practical problems

PO 2: An ability to write and present a substantial technical report / document.

PO 3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor's.

PO 4: Possesses critical thinking skills and solves core, complex and multidisciplinary structural engineering problems.

PO 5: Assess the impact of professional engineering solutions in an environmental context along with societal, health, safety, legal, ethical and cultural issues and the need for sustainable development.

PO 6: Recognize the need for life-long learning to improve knowledge and competence.

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COURSE OBJECTIVES

Academic **Y**ear : 2022-22 2

Semester: I

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: ADVANCED CONCRETE TCHNOLGY Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.:Civil Engineering

Designation: PROFESSOR

On completion of this Subject/Course the student shall be able to:

S.No	Objectives
1	To study the physical and chemical properties of cement and admixtures. And also to know about hydration and SEM analysis. .
2.	To study the properties and conduct the tests on fresh and hardened concrete
3	To acquire the practical knowledge on mix design principles, concepts and methods.
4	To get an adequate knowledge about the special concretes and their applications in the diverse construction field.
5	To design the forms of different materials for the different types of works under different conditions..

Signature of HOD Signature of faculty

Date: Date:

Note: Please refer to Bloom's Taxonomy, to know the illustrative verbs that can be used to state the objectives.

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COURSE OUTCOMES

Academic **Y**ear : 2022-23 3

Semester: I

Name of the Program: M.Tech(Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code:**GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.:Civil Engineering

Designation: PROFESSOR.

The expected outcomes of the Course/Subject are:

S.No	Outcomes
1	List out the types of cement, admixture and decide the suitable cement and admixture for specific purpose.
2	Determine the properties of concrete ingredients i.e. cement, fine aggregate and coarse aggregate by conducting different tests such as work ability etc.,
3	Design the mix proportion of ordinary, standard and high strength concrete by using different methods and how the strength of concrete can be modified by changing the proportions. .
4	Decide suitable concrete for different structures considering the prevailing weathering conditions and Design economic concrete mix proportion for different exposure conditions and intended purposes with special concrete.
5	Design the forms for a specific work and decide the time of removal of forms for the different elements in different situations.

Signature of HOD Signature of faculty

Date: Date:

Note: Please refer to Bloom's Taxonomy, to know the illustrative verbs that can be used to state the outcomes.

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M.Tech (Structural Engineering) I Year I Semester		
Academic Year 2022-23		
S.No	**Student Name**	**Roll No**
1	ADDAGATLA MAHESHKUMAR	22241D2001
2	AHMED ABDUL AZEEM	22241D2002
3	BAIRAPAKA BHARAT	22241D2003
4	BARLAPUDI ACHSAHKEERTHANA	22241D2004
5	CHAKALI SOWMYA	22241D2005
6	CHAPPIDI NARESH	22241D2006
7	DANTHALA HARIDEEPKUMAR	22241D2007
8	DEVIREDDY ANISH	22241D2008
9	DHARAVATHNAGENDAR	22241D2009
10	GANGAPURAM SUSHANTH REDDY	22241D2010
11	JEREPOTHULARAVALIKA	22241D2011
12	KADABOHINASAIPAVAN	22241D2012
13	KASUMURU BHARAT KUMAR	22241D2013
14	MACHARLA SRINIVAS	22241D2014
15	MALLI SREENIVASULU	22241D2015
16	SHAIK ABDUL MUQEED	22241D2016
17	SHAIK ZABI ULLAH	22241D2017
18	SONWANE SAHILSHIVAJIRAO	22241D2018
19	LINGAM LAKSHMI NARAYANA	22241D2019

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GUIDELINES TO STUDY THE COURSE/SUBJECT

Academic **Y**ear : 2022-23

Semester : I

Name of the Program: M.Tech(Structural Engineering) Year: I

Course/Subject: Advanced ConcreteTechnolgy Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

Designation: PROFESSOR

Guidelines to study the Course/ Subject: Structural Analysis

Course Design and Delivery System (CDD):

- The Course syllabus is written into number of learning objectives and outcomes.
- These learning objectives and outcomes will be achieved through lectures, assessments, assignments, experiments in the laboratory, projects, seminars, presentations, etc.
- Every student will be given an assessment plan, criteria for assessment, scheme of evaluation and grading method.
- The Learning Process will be carried out through assessments of Knowledge, Skills and Attitude by various methods and the students will be given guidance to refer to the text books, reference books, journals, etc.

The faculty be able to –

- Understand the principles of Learning
- Understand the psychology of students
- Develop instructional objectives for a given topic
- Prepare course, unit and lesson plans
- Understand different methods of teaching and learning
- Use appropriate teaching and learning aids
- Plan and deliver lectures effectively
- Provide feedback to students using various methods of Assessments and tools of Evaluation
- Act as a guide, advisor, counselor, facilitator, motivator and not just as a teacher alone

Signature of HOD Signature of faculty

Date: Date:

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COURSE SCHEDULE

Academic **Y**ear : 2022-23

Semester : I

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject:Matrix Methods in Structural analysis Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

Designation: PROFESSOR

The Schedule for the whole Course / Subject is:

S. No.	Description	Duration (Date)		Total No. Of Periods
		From	To	
1.	Unit – I Concrete Making Materials	07-11-22	21-11-22	10
2.	Unit- II Fresh and Hardened Concrete	22-11-22	19-12-22	14
3.	Unit-III High strength concrete	19-12-22	11-01-23	11
4.	Unit-IV Special concretes	16-01-23	31-01-23	11
5.	Unit-V Formwork for concrete	01-02-23	28-02-23	16

Total No. of Instructional periods available for the course: 62Hours / Periods

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SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic **Y**ear : 2022-23
Semester : I UNIT NO.: I
Name of the Program: M.Tech(Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy Course Code: **GR22D5004**
Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
Designation: PROFESSOR.

Lesson No.	**Date**	**No. of Periods**	**Topics / Sub - Topics**	**Objectives & Outcomes Nos.**	**References (Text Book, Journal…) Page Nos.: ____to ____**
1	7-11-2022	1	Introduction about Advanced Concrete Technology	1 & 1	Concrete Technology by M.S.Shetty
2	7-11-2022	1	Bogue's compounds	1 & 1	
3	8-11-2022	1	Hydration process	1 & 1	
4	9-11-2022	1	Alkali Aggregate Reaction	1 & 1	
5	14-11-2022	1	Mineral Admixtures	1 & 1	
6	14-11-2022	1	Chemical Admixtures	1 & 1	
7	15-11-2022	1	Chemistry of Portland Cement manufacture,	1 & 1	
8	16-11-2022	1	Hydration of calcium silicate phases	1 & 1	
9	21-11-2022	1	Hydrated aluminates, ferrite	1 & 1	
10	21-11-2023	1	Sulphate phases	1 & 1	

Signature of HOD
Date:

Signature of faculty
Date:

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SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic **Y**ear : 2022-23
Semester : I UNIT NO.: II
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy Course Code: **GR22D5004**
Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
Designation: PROFESSOR.

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
1	22-11-2023	1	Workability tests on Fresh concrete ,	2 & 2	Concrete Technology by M.S.Shetty
2	28-11-2022	1	segregation and bleeding	2 & 2	
3	28-11-2022	1	Hardened concrete	2 & 2	
4	29-11-2022	1	Abram's law	2 & 2	
5	30-11-2022	1	Gel space ratios, maturity concept	2 & 2	
6	05-12-2022	1	Stress behavior,	2 & 2	
7	05-12-2022	1	Creep	2 & 2	
8	06-12-2022	1	Shrinkage	2 & 2	
9	07-12-2022	1	Durability tests on concrete	2 & 2	
10	12-12-2022	1	Hardened properties of concrete	2 & 2	
11	12-12-2022	1	Non Destructive Testing of concrete- Methods	2 & 2	
12	13-12-2022	1	Non Destructive Testing of concrete- Rebound Hammer	2 & 2	
13	14-12-2022	1	Non Destructive Testing of concrete-UPV	2 & 2	
14	19-12-2022	1	Micro structure and strength	2 & 2	

Signature of HOD
Date:

Signature of faculty
Date:

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SCHEDULE OF INSTRUCTIONS

UNIT PLAN

Academic **Y**ear : 2022-23
Semester : I UNIT NO.: III
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy Course Code: **GR22D5004**
Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
Designation: PROFESSOR.

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
1	19-12-2022	1	High strength concrete(HSC)	3 & 3	Structural Analysis by S.S.Bhavikati
2	20-12-2022	1	High performance concrete(HPC)	3 & 3	Strength of Materials and Mechanics of structures by B.C.Punmia
3	21-12-2022	1	Difference between HSC and HPC	3 & 3	
4	02-01-2023	1	Use of NANO materials	3 & 3	
5	02-01-2023	1	Manufacture and design of HSC using Erintroy and Shaklok method	3 & 3	
6	03-01-2023	1	Ultra High Strength Concrete	3 & 3	
7	04-01-2023	1	Requirements and properties of HPC	3 & 3	
8	09-01-2023	1	Design of HSC using IS method	3 & 3	
9	09-01-2023	1	Mix design problem solving	3 & 3	
10	10-01-2023	1	Mix design problem solving	3 & 3	
11	11-01-2023	1	Mix design problem solving	3 & 3	

Signature of HOD
Date:

Signature of faculty
Date:

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SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic **Y**ear : 2022-23
Semester : I UNIT NO.: IV
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy Course Code: **GR22D5004**
Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
Designation: PROFESSOR.

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
1	16-01-2023	1	Introduction about Special Concretes	4 & 4	Concrete Technology by M.S.Shetty
2	16-01-2023	1	Self-Compacting Concrete(SCC). Requirements, guidelines, advantages and applications.	4 & 4	
3	17-01-2023	1	Mix design of SCC by NANSU method	4 & 4	
4	18-01-2023	1	Polymer Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
5	23-01-2023	1	Fiber Reinforced Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
6	23-01-2023	1	Reactive Powder Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
7	24-01-2023	1	Geo Polymer Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
8	25-01-2023	1	Light weight Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
9	30-01-2023	1	Bacterial Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
10	30-01-2023	1	Mix Design problem	4 & 4	
11.	31-01-2023	1	Mix design problem	4 & 4	

Signature of HOD
Date:

Signature of faculty
Date:

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SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic **Y**ear : 2022-23

Semester : I UNIT NO.: V

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technolgy Course Code: **GR22D5004**
Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

Designation: PROFESSOR.

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
1	01-02-2023	1	Formwork for concrete	5 & 5	Concrete Technology by M.S.Shetty
2	06-02-2023	1	Materials and structural requirements	5 & 5	
3	06-02-2023	1	Formwork systems	5 & 5	
4	07-02-2023	1	Connections	5 & 5	
5	08-02-2023	1	Specifications	5 & 5	
6	13-02-2023	1	Slip forms	5 & 5	
7	13-02-2023	1	Permanent formwork	5 & 5	
8	14-02-2023	1	Latest formwork	5 & 5	
9	15-02-2023	1	Design of formwork	5 & 5	
10.	20-02-2023	1	Shores and Reshoring	5 & 5	
11.	20-02-2023	1	Removal of forms	5 & 5	
12.	21-02-2023	1	Failure of formwork	5 & 5	
13.	22-02-2023	1	Case studies	5 & 5	
14.	27-02-2023	1	Case studies	5 & 5	
15.	27-02-2023	1	Case studies	5 & 5	
16	28-02-2023	1	Case studies	5 & 5	

Signature of HOD
Date:

Signature of faculty
Date:

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SCHEDULE OF INSTRUCTIONS
COURSEPLAN

Academic **Y**ear : 2022-23

Semester : I UNIT NO.: I TO V

Name of the Program: M.Tech Year: I

Course/Subject: Advanced Concrete Technolgy Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.:Civil Engineering

Designation: PROFESSOR

Unit No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
1.	1.	7-11-2022	1	Introduction about Advanced Concrete Technology	1 & 1	Concrete Technology by M.S.Shetty , Properties of Concrete by A.M.Niville and Design of Concrete Mixes by N.Krishna Raju
	2.	8-11-2022	1	Bogue's compounds	1 & 1	
	3.	9-11-2022	1	Hydration process	1 & 1	
	4.	14-11-2022	1	Alkali Aggregate Reaction	1 & 1	
	5.	14-11-2022	1	Mineral Admixtures	1 & 1	
	6.	15-11-2022	1	Chemical Admixtures	1 & 1	
	7.	16-11-2022	1	Chemistry of Portland Cement manufacture,	1 & 1	
	8.	21-11-2022	1	Hydration of calcium silicate phases	1 & 1	
	9	21-11-2023	1	Hydrated aluminates, ferrite	1 & 1	
	10	10-11-2022	1	Sulphate phases	1 & 1	

Unit No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
2.	1.	22-11-2023	1	Workability tests on Fresh concrete ,	2 & 2	Concrete Technology by M.S.Shetty , Properties of Concrete by A.M.Niville and Design of Concrete Mixes by N.Krishna Raju
	2.	28-11-2022	1	segregation and bleeding	2 & 2	
	3.	28-11-2022	1	Hardened concrete	2 & 2	
	4.	29-11-2022	1	Abram's law	2 & 2	
	5.	30-11-2022	1	Gel space ratios, maturity concept	2 & 2	
	6.	05-12-2022	1	Stress behavior,	2 & 2	
	7.	05-12-2022	1	Creep	2 & 2	
	8.	06-12-2022	1	Shrinkage	2 & 2	
	9.	07-12-2022	1	Durability tests on concrete	2 & 2	
	10.	12-12-2022	1	Hardened properties of concrete	2 & 2	
	11.	12-12-2022	1	Non Destructive Testing of concrete- Methods	2 & 2	
	12.	13-12-2022	1	Non Destructive Testing of concrete- Rebound Hammer	2 & 2	
	13.	14-12-2022	1	Non Destructive Testing of concrete-UPV	2 & 2	
	14.	19-12-2022	1	Micro structure and strength	2 & 2	

Unit No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
3.	1.	19-12-2022	1	High strength concrete(HSC)	3 & 3	Concrete Technology by M.S.Shetty , Properties of Concrete by A.M.Niville and Design of Concrete Mixes by N.Krishna Raju
	2.	20-12-2022	1	High performance concrete(HPC)	3 & 3	
	3.	21-12-2022	1	Difference between HSC and HPC	3 & 3	
	4.	02-01-2023	1	Use of NANO materials	3 & 3	
	5.	02-01-2023	1	Manufacture and design of HSC using Erintroy and Shaklok method	3 & 3	
	6.	03-01-2023	1	Ultra High Strength Concrete	3 & 3	
	7.	04-01-2023	1	Requirements and properties of HPC	3 & 3	
	8.	09-01-2023	1	Design of HSC using IS method	3 & 3	
	9.	09-01-2023	1	Mix design problem solving	3 & 3	
	10.	10-01-2023	1	Mix design problem solving	3 & 3	
	11.	11-01-2023	1	Mix design problem solving	3 & 3	

Unit No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
4.	1.	16-01-2023	1	Introduction about Special Concretes	4 & 4	Concrete Technology by M.S.Shetty , Properties of Concrete by A.M.Niville and Design of Concrete Mixes by N.Krishna Raju
	2.	16-01-2023	1	Self-Compacting Concrete(SCC). Requirements, guidelines, advantages and applications.	4 & 4	
	3.	17-01-2023	1	Mix design of SCC by NANSU method	4 & 4	
	4.	18-01-2023	1	Polymer Concrete. Requirements, guidelines, advantages and applications.	4 & 4	

	5.	23-01-2023	1	Fiber Reinforced Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
	6.	23-01-2023	1	Reactive Powder Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
	7.	24-01-2023	1	Geo Polymer Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
	8.	25-01-2023	1	Light weight Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
	9.	30-01-2023	1	Bacterial Concrete. Requirements, guidelines, advantages and applications.	4 & 4	
	10.	30-01-2023	1	Mix Design problem	4 & 4	
	11.	31-01-2023	1	Mix design problem	4 & 4	

Unit No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	References (Text Book, Journal…) Page Nos.: ____to ____
5.	1.	01-02-2023	1	Formwork for concrete	5 & 5	Concrete Technology by M.S.Shetty , Properties of Concrete by A.M.Niville and Design of Concrete Mixes by N.Krishna Raju
	2.	06-02-2023	1	Materials and structural requirements	5 & 5	
	3.	06-02-2023	1	Formwork systems	5 & 5	
	4.	07-02-2023	1	Connections	5 & 5	
	5.	08-02-2023	1	Specifications	5 & 5	
	6	13-02-2023	1	Slip forms	5 & 5	
	7	13-02-2023	1	Permanent formwork	5 & 5	
	8	14-02-2023	1	Latest formwork	5 & 5	
	9	15-02-2023	1	Design of formwork	5 & 5	

	10.	20-02-2023	1	Shores and Reshoring	5 & 5	
	11.	20-02-2023	1	Removal of forms	5 & 5	
	12.	21-02-2023	1	Failure of formwork	5 & 5	
	13.	22-02-2023	1	Case studies	5 & 5	
	14.	27-02-2023	1	Case studies	5 & 5	
	15.	27-02-2023	1	Case studies	5 & 5	
	16.	28-02-2023	1	Case studies	5 & 5	

Signature of HOD

Signature of faculty

Date:

Date:

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
2. ADDITIONAL TOPICSCOVERED, IF ANY, MAY ALSO BE SPECIFIED IN BOLD
3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

GokarajuRangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

EVALUATION STRATEGY

Academic **Y**ear : 2022-23

Semester : I

Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: **Advanced Concrete Technolgy** Subject Code:**GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

Designation : PROFESSOR

1. TARGET:

A) Percentage for pass: 98%

b) Percentage of class: 1st class with distinction - 70%
1st class - 30%

2. COURSE PLAN& CONTENT DELIVERY

(Please write how you intend to cover the contents: i.e., coverage of Units/Lessons by lectures, design, exercises, solvingnumericalproblems, demonstrationofmodels,modelpreparation, experiments in the Lab., orbyassignments,etc.)

3. METHOD OF EVALUATION

3.1 ☐ Continuous Assessment Examinations (CAE-I, CAE-II)

3.2 ☐ Assignments/Seminars

3.3 ☐ Project Review/ Comprehensive viva-voce

3.4 ☐ Quiz

3.5 ☐ Semester/End Examination

3.6 ☐ Others

4. List out any new topic(s) or any innovation you would like to introduce in teaching the subjects in this Semester.

……..

Signature of HOD
Date:

Signature of faculty
Date:

GR22D5004 Advanced Concrete Technology	Course Outcomes				
Course Objectives	1	2	3	4	5
1	X				
2		X			
3			X		
4				X	
5					X

GR22D5004 Advanced Concrete Technology	Course Outcomes				
Assessment	1	2	3	4	5
1	X				
2		X			
3			X		
4				X	
5					X

GR22D5004 Advanced Concrete Technology	Course Objectives				
Assessments	1	2	3	4	5
1	X				
2		X			
3			X		
4				X	
5					X

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TUTORIAL SHEET - 1

Academic **Y**ear : 2022-23 Date: 15-11-2022
Semester : I
Name of the Program:M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

This Tutorial corresponds to Unit No. 1/ Lesson: **Concrete Making Materials (GR22D5004)**

1. What are Bogues compounds? Explain their importance.
2. What is heat of hydration? How does this affect the quality of concrete?
3. List the advantages and disadvantages of PPC.
4. Explain briefly the manufacture of Portland cement using dry process.

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 1,1

Outcome Nos.: 1,1

Signature of HOD Signature of faculty

Date: Date:

GokarajuRangaraju Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

TUTORIAL SHEET - 2

Academic **Y**ear : 2022-23 Date: 29-11-2022
Semester : I
Name of the Program: M.Tech(Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
This Tutorial corresponds to Unit No. 2/ Lesson: **Fresh and Hardened concrete (GR22D5004)**

Designation : PROFESSOR

This Tutorial corresponds to Unit No. 2/ Lesson**Assembly of stiffness matrices**

1. **Explain about the workability tests conducted on Fresh concrete.**
2. **Explain about Segregation and Bleeding.**
3. **Explain about Abram's law and Maturity concept.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 2
Outcome Nos.: 2,

Signature of HOD Signature of faculty

Date: Date:

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Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

TUTORIAL SHEET - 3

Academic **Y**ear : 2022-23 Date: 19-12-2022
Semester : I
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
This Tutorial corresponds to Unit No. 3/ Lesson: **High Strength Concrete (GR22D5004)**
Designation : PROFESSOR

1. **Distinguish between HSC and HPC.**
2. **Explain about making of HSC.**
3. **List the advantage and disadvantages of HSC.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 3

Outcome Nos.: 3

Signature of HOD Signature of faculty

Date: Date:

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TUTORIAL SHEET - 4

Academic **Y**ear : 2022-23 Date: 12-01-2023
Semester : I
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

This Tutorial corresponds to Unit No. 4/ Lesson: **Special Concretes (GR22D5004)**
Designation : PROFESSOR

1. **List the advantages and dis advantages of SCC.**
2. **Explain the design of SCC by NAN SU method.**
3. **List the properties of Polymer Concrete.**
4. **Explain the advantages and disadvantages of Geo Polymer Concrete.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.
Objective Nos.: 4
Outcome Nos.: 4

Signature of HOD Signature of faculty

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TUTORIAL SHEET - 5

Academic **Y**ear : 2022-23 Date:13-02-2023

Semester : I
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

This Tutorial corresponds to Unit No. 5/ Lesson: **Formwork (GR22D5004)**
Designation : PROFESSOR

1. **Discuss about different types of formwork.**
2. **Explain about structural requirements of formwork.**
3. **Explain about SLIP FORMS.**
4. **Explain about Permanent Formwork.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.
Objective Nos.: 5
Outcome Nos.: 5

Signature of HOD Signature of faculty

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AASIGNMENT SHEET - 1

Academic **Y**ear : 2022-23 Date: 15-11-2022

Semester : I

Name of the Program:M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technolgy

Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

This Tutorial corresponds to Unit No. 1/ Lesson: **Concrete Making Materials (GR22D5004)**

1. Discuss in detail on AAR. Also list the factors that promote AAR.
2. Discuss about effects of super plasticizers on the properties of fresh and hardened concrete.
3. List the effects of Fly ash on the fresh and hardened concrete.
4. List the advantages and disadvantages of Micro Silica.

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 1,1

Outcome Nos.: 1,1

Signature of HOD Signature of faculty

Date: Date:

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ASSIGNMENT SHEET - 2

Academic **Y**ear : 2022-23 Date: 29-11-2022
Semester : I
Name of the Program: M.Tech(Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
This Tutorial corresponds to Unit No. 2/ Lesson: **Fresh and Hardened concrete (GR22D5004)**

Designation : PROFESSOR

This Tutorial corresponds to Unit No. 2/ Lesson**Assembly of stiffness matrices**

1. **Explain about shrinkage, creep and elasticity of hardened concrete.**
2. **List the Non Destructive Tests conducted on concrete and explain about UPV test.**
3. **Calculate gel space ratio and the strength of concrete sample on full hydration as well as on 70 % hydration having 500 gram cement and water cement ratio of 0.45.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 2
Outcome Nos.: 2,

Signature of HOD Signature of faculty

Date: Date:

GokarajuRangaraju Institute of Engineering and Technology (Autonomous)

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ASSIGNMENT SHEET - 3

Academic **Y**ear : 2022-23 Date: 19-12-2022
Semester : I
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
This Tutorial corresponds to Unit No. 3/ Lesson: **High Strength Concrete (GR22D5004)**
Designation : PROFESSOR

1. **List the applications of HSC.**
2. **List the advantages of HPC.**
3. **Discuss about use of NANO materials.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 3

Outcome Nos.: 3

Signature of HOD Signature of faculty

Date: Date:

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ASSIGNMENT SHEET - 4

Academic **Y**ear : 2022-23 Date: 12-01-2023
Semester : I
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

This Tutorial corresponds to Unit No. 4/ Lesson: **Special Concretes (GR22D5004)**
Designation : PROFESSOR

1. **Discuss about factors affecting the properties of Fiber Reinforced Concrete.**
2. **Explain about different types of Fiber Reinforced Concrete.**
3. **Discuss about functions of ingredients of Reactive Powder Concrete.**
4. **List the advantages and disadvantages of Bacterial Concrete.**
5. **Explain the characteristics of Light Weight Concrete.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.
Objective Nos.: 4
Outcome Nos.: 4

Signature of HOD Signature of faculty

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ASSIGNMNET SHEET - 5

Academic **Y**ear : 2022-23 Date:13-02-2023

Semester : I
Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technolgy
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering

This Tutorial corresponds to Unit No. 5/ Lesson: **Formwork (GR22D5004)**
Designation : PROFESSOR

1. **Explain about Latest Formwork.**
2. **Explain about Shoring and Reshoring.**
3. **Discuss about removal forms.**
4. **Discuss about failure of formwork.**
5. **List the reasons for failure of formwork and recommendations made by considering a case study.**

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.
Objective Nos.: 5
Outcome Nos.: 5

Signature of HOD Signature of faculty

RUBRIC SHEET

Academic **Y**ear : 2022-23
Semester : I
Name of the Program: M.Tech Structural EngineeringYear: I
Course/Subject: **ADVANCED CONCRETE TECHNOLOGY** Course Code:**GR22D5004**
Name of the Faculty:Dr.V.Mallikarjuna Reddy Dept.: Civil Engineering
Designation: Professor
Objective: To learn the concepts of Special Concretes and Formwork
Student Outcome: Able to understand the different types of special concretes and importance of formwork.

			Beginning	**Developing**	**Reflecting Development**	**Accomplished**	**Exemplary**	**Score**
S. No	**Name of the Student**	**Performance Criteria**	**1**	**2**	**3**	**4**	**5**	
1	22241D 2018	Knowledge of Mineral and chemical admixtures	Low level of knowledge on chemical admixtures	Able to to know the importance of admixtures	Ability to explain the application of admixtures	Full knowledge on admixtures	Use of mineral admixtures	5
		The level of knowledge on HSC and HPC	Low level of knowledge on HSC and HPC	Able to discuss about HSC and HPC	Ability to explain making of HSC and HPC	Full knowledge on properties of HSC and HPC	Analysing and application of knowledge on HSCand HPC	4
		The level of knowledge on types of formwork	Low level of knowledge on importance of formwork	Ability to discuss and to study the various formworks	Ability to explain various formworks	Full knowledge on various on the requirement of formwork	Analysing and implementing the knowledge of using suitable formwork for a particular work.	3
							Average Score	4

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COURSE COMPLETION STATUS

-**A**cademic **Y**ear : 2022-23

Semester : I

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: **Advanced Concrete Structures** Course Code:**GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy Dept.:Civil Engineering

Designation: PROFESSOR

Actual Date of Completion & Remarks, if any

Units	**Remarks**	**No. of Objectives Achieved**	**No. of Outcomes Achieved**
Unit 1	Concrete making materials	1	1
Unit 2	Fresh and Hardened Concrete	2	2
Unit 3	High Strength Concrete	3	3
Unit 4	Special Concretes	4	4
Unit 5	Formwork	5	5

Signature of HOD Signature of faculty

Date: Date:

Note: After the completion of each unit mention the number of Objectives & Outcomes Achieved.

MAPPING

GR22D5004 Advanced Concrete Technology	Course Outcomes				
Course Objectives	1	2	3	4	5
1	X				
2		X			
3			X		
4				X	
5					X

GR22D5004 Advanced Concrete Technology	Course Outcomes				
Assessment	1	2	3	4	5
1	X				
2		X			
3			X		
4				X	
5					X

GR22D5004 Advanced Concrete Technology	Course Objectives				
Assessments	1	2	3	4	5
1	X				
2		X			
3			X		
4				X	
5					X

Course	Program Outcomes					
	1	2	3	4	5	6
GR22D5004 Advanced Concrete Technology	X	X	X	X	X	X

GR22D5004 Advanced Concrete Technology	Program Outcomes					
Course Outcomes	1	2	3	4	5	6
List out the types of cement, admixture and decide the suitable cement and admixture for specific purpose	M			M	M	M
Determine the properties of concrete ingredients i.e. cement, fine aggregate and coarse aggregate by conducting different tests such as work ability etc.,	M			M	M	M
Design the mix proportion of ordinary, standard and high strength concrete by using different methods and how the strength of concrete can be modified by changing the proportions.	M		H	M	M	M
Decide suitable concrete for different structures considering the prevailing weathering conditions and Design economic concrete mix proportion for different exposure conditions and intended purposes with special concrete.	M		M	M	H	H
Design the forms for a specific work and decide the time of removal of forms for the different elements in different situations.	M	H	M	M	H	H

GR22D5004	GR22	Set - 1

M.Tech I Year I Semester Regular Examinations, March 2023

ADVANCED CONCRETE TECHNOLOGY
(Structural Engineering)

Time: 3 hours **Max Marks: 60**

Note:
1. Please verify the regulation of question paper and subject name
2. Question Paper Consists of Part-A and Part- B
3. Assume required data, if not given in the question

Bloom's (Taxonomy) Levels	Percentage of weight age	Marks allotted
BL1 (Knowledge: Remember)	30 to 40	18 to 24
BL2 (Comprehension: Understand)		
BL3 (Application: Apply)	60 to 70	36 to 42
BL4 (Analysis: Analyze)		
Total	100	60

PART – A (BL1 to BL4)

(Answer ALL Questions) **(10x1 = 10 Marks)**

1	List Bogue's compounds.	BL1-CO1 1 M
2	List any four types of chemical admixtures.	BL1--CO1 1M
3	Define shrinkage.	BL2-CO21 M
4	Define creep.	BL2-CO21 M
5	Describe High Strength Concrete.	BL2-CO31 M
6	Describe High Performance Concrete.	BL2-CO31 M
7	What is Geopolymer concrete?	BL1-CO41 M
8	Describe self healing concrete.	BL2-CO41 M
9	Define formwork.	BL2-CO51 M
10	Describe slip forms.	BL2-CO51 M

PART – B (BL1 to BL4)

(Answer ALL Questions) **(5X10 = 50 Marks)**

Each Question Carries 10 marks and may have a, b. as sub Questions

11	a)	Illustrate about Hydration process.	BL3- CO1Marks-5
	b)	Illustate about Alkali Silica Reaction.	BL3- CO1Marks-5
		[OR]	
12	a)	List about various mineral admixtures and Illustrate about any two admixtures.	BL3- CO1 Marks-5
	b)	Illustrate about Micro structure of concrete.	BL3- CO1Marks-5
13	a)	Define Workability and analyze the factors affecting Workability.	BL4- CO2 Marks-5
	b)	Appraise about segregation and bleeding.	BL4- CO2 Marks-5
		[OR]	
14	a)	Analyze about Abram's law, Gel Space ratio and Maturity concept.	BL4- CO2 Marks-5
	b)	Illustrate about Non Destructive Testing of concrete.	BL4- CO2 Marks-5
15	a)	Illustrate about the requirements of High Performance Concrete	BL3- CO3 Marks-5

	b)	Illustrate about the properties of High Strength Concrete	BL3- CO3 Marks-5
		[OR]	
16	a)	Illustrate about design of High strength concrete using Entroy and Shacklock method.	BL3- CO3 Marks-5
	b)	Illustrate about use of NANO materials.	BL3- CO3 Marks-5
17	a)	Illustrate the advantages and applications of Fiber Reinforced Concrete.	BL3- CO4 Marks-5
	b)	Illustrate the advantages and applications of Reactive Powder Concrete.	BL3- CO4 Marks-5
		[OR]	
18	a)	Illustrate the step wise procedure for mix design using BIS method.	BL3- CO4 Marks-5
	b)	Illustrate the step wise procedure for mix design using ACI method.	BL3- CO4 Marks-5
19	a)	Analyze the formwork erection and striking sequence in construction of a typical floor.	BL4- CO5 Marks-5
	b)	Analyze the permanent formwork	BL4- CO5 Marks-5
		[OR]	
20	a)	Analyze the Re-shoring of Formwork.	BL4- CO5 Marks-5
	b)	Analyze the failure of Formwork.	BL4- CO5 Marks-5

*****

Gokaraju Rangaraju Institute of Engineering and Technology

(Autonomous)

I M.Tech. I Semester 2022-23 I Mid-Term Examinations – DEC 2022

2	2	2	4	1	D				

Name: _____ Branch/Section: _____

Subject: ADVANCED CONCRETE TECHNOLOGY
Code: GR22D5004
Branch: Structural Engineering
Max Marks: 30
Date: 27- 12-2022 (FN) **Duration: 120 min.**

Answer All Questions Time: 15 min. Marks: 10x1=10

Q. No.	Unit	CO	BL*	PI
1	Why concrete technology is needed. [ ] a)Concrete technology is needed to build a building b) Concrete technology is needed to address properties of concrete c) Concrete technology is needed to produce building materials d) None of the above	CO1	BL2	4.1.1
2	Which of the following cement is used in sewage and water treatment plants? [ ] a) Sulphate Resisting Cement b) Quick Setting Cement c) Low Heat Cement d) Rapid Hardening Cement	CO1	BL1	4.2.2
3	Hydration of cement is chemical reaction of cement with _____ [ ] a) base b) acid c) salt and acid d) wate	CO1	BL2	4.1.1
4	Bogue's compounds are _____ [ ] a) Alite b) C_2S c) Tricalcium Aluminate d) All the above	CO1	BL1	6.2.2
5	Compaction Factor Test is used for concrete having [ ] a) Very low workability b) Very high workability c) Both a&b d) None of the above	CO2	BL1	5.2.2
6	The bleeding water emerged at the top surface of concrete, when evaporates make the top surface [ ] a) Strong b) Hard c) Porous d) All the above	CO2	BL2	5.2.1
7	How is the creep related to the strength of concrete? [ ] a) Directly proportional b) Inversely proportional c) Equal d) None of the above	CO2	BL2	6.1.1
8	Gel Space ratio is [ ] a) Volume of water to the volume of cement b) Volume of the hydrated cement paste to the sum of volumes of hydrated cement. c) Volume of gel to the volume of space present in the concrete d) Volume of the hydrated cement paste to the sum of volumes of the hydrated cement and of the capillary pores	CO2	BL2	5.2.1
9	Un conventional special methods used for making HSC are [ ] a) Seeding b) Revibration c) Sulphur impregnation d) All the above	CO3	BL2	6.3.2
10	NANO materials are [ ] a) Nano Silica b) TiO_2 c) Both a & b d) None of the above	CO3	BL1	6.2.1

Gokaraju Rangaraju Institute of Engineering and Technology

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I M.Tech. I Semester 2022-23 I Mid-Term Examinations – DEC 2022

Subject: ADVANCED CONCRETE TECHNOLOGY **Code: GR22D5004**

Branch: Structural Engineering **Date:** 27-12-2022(FN)

Answer Any FOUR Questions **(4 X 5 = 20 Marks)** **Time: 105 min.**

Q. No.	Unit	M	CO	BL*	PI
1	What is heat of hydration? How does this affect the quality of concrete?	5	CO1	BL3	4.1.2
2	Explain in datil about Alkali Aggregate Reaction.	5	CO1	BL2	4.1.1
3	a. Write short notes on Segregation and Bleeding. b. The strength of a sample of fully matured concrete is found to be 40MPa. Find the strength of identical concrete at the age of 7days when cured at an average temperature of during day time at 25°C and Night time at 15°C.	2 3	CO2	BL2 BL4	6.3.1 5.3.1
4	Explain about UPV test.	5	CO2	BL3	6.2.1
5	a. Discuss the advantages of PPC. b. Distinguish between HSC and HPC	2 3	CO1, CO3	BL2 BL2	3.1.2 6.1.2
6	a. Write short notes on Shrinkage and Creep. b. Discuss the advantages of HSC.	2 3	CO2, CO3	BL2 BL2	3.2.1 3.1.2

GokarajuRangaraju Institute of Engineering and Technology

(Autonomous)

I M.Tech. I Semester 2022-23 II Mid-Term Examinations MARCH 2023

2	2	2	4	1	D				

Name: _____Branch/Section: _____

Subject: ADVANCED CONCRETE TECHNOLOGYCode:GR22D5004
Branch: Structural Engineering MaxMarks: 30
Date: 04- 03-2023 (FN) Duration: 120 min.

Answer All Questions Time: 15 min. Marks: 10x1=10

Q. No.	Unit	CO	BL*	PI
1	Aerated concrete is. [ ] a)Very heavy weight b)Heavy weight c) Medium weight d) Light weight	CO4	BL1	4.1.2
2	No fines concrete is manufactured by _____ [ ] a) By adding no fines materials from normal concrete b) By eliminating no fines materials from normal concrete c) By reducing its strength d) By increasing its strength	CO4	BL2	4.1.1
3	SCC has _____segregation resistance [ ] a)Good b) bad c) average d) poor	CO4	BL2	4.1.1
4	Fiber aspect ratio is the ratio of _____ [ ] a) length to twice diameter b) diameter to length c) length to diameter d) All the above	CO4	BL1	6.2.1
5	Bacterial concrete is also known as [ ] a) Bio concrete b) self healing concrete c) Both a&b d) None of the above	CO4	BL1	4.1.2
6	Temporary casing is known as the [ ] a) Support b) Formwork c) Built up d) All the above	CO5	BL2	4.1.1
7	The____ formwork is used for formwork when it is desired to use the formwork several times. [ ] a) Plastic b) Timber c) Steel d) None of the above	CO5	BL2	4.1.1
8	The construction of a temporary structure required to support an unsafe structure is called [ ] a) Underpinning b) Shoring c) Scaffolding d) Jacking	CO5	BL2	4.2.2
9	Temporary structure used to support the forms for concrete is known as_____. [ ] a) Falsework b) Shoring c) Reshoring d) None of the above	CO5	BL1	4.2.2
10	Factors Affecting Concrete Formwork Striking Times [ ] a) Grade of concrete b) Type of cement c) Temperature d) All the above	CO5	BL2	6.2.1

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I M.Tech. II Semester 2022-23 II Mid-Term Examinations – MARCH 2023

Subject: ADVANCED CONCRETE TECHNOLOGY Code: GR22D5004
Branch: Structural Engineering Date: 04-03-2023

Answer Any FOUR Questions (4 X 5 = 20 Marks) Time: 105 min.

Q. No.	Unit	M	CO	BL*	PI
1	Explain the design of SCC by NAN SU method.	5	CO4	BL3	4.3.1
2	Explain the advantages and disadvantages of Geo Polymer Concrete.	5	CO4	BL2	4.1.1
3	a.Analyze the characteristics of Light Weight Concrete. b. List two requirements of HPC.	4 1	CO4 CO3	BL4 BL1	6.3.1 6.2.1
4	Discuss about different types of formwork.	5	CO5	BL5	5.3.1
5	Explain about SLIP FORMS.	5	CO5	BL3	6.1.2
6	a.Evaluate the reasons for failure of formwork and recommendations made by considering a case study. b. List two properties of HPC.	4 1	CO5 CO3	BL5 BL1	1.1.3 6.2.1

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Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

M.Tech StructuralEngg. I yr-I Sem- GR22 2022-23			
Advanced Concrete Technology GR22D5004 (MID-I)			
S.No	**Roll No**	**Name of Student**	**Maximum Marks (30 M)**
1	22241D2001	ADDAGATLA MAHESHKUMAR	29
2	22241D2002	AHMED ABDUL AZEEM	27
3	22241D2003	BAIRAPAKA BHARAT	13
4	22241D2004	BARLAPUDI ACHSAHKEERTHANA	27
5	22241D2005	CHAKALI SOWMYA	19
6	22241D2006	CHAPPIDI NARESH	17
7	22241D2007	DANTHALA HARIDEEPKUMAR	17
8	22241D2008	DEVIREDDY ANISH	20
9	22241D2009	DHARAVATHNAGENDAR	11
10	22241D2010	GANGAPURAM SUSHANTH REDDY	17
11	22241D2011	JEREPOTHULARAVALIKA	16
12	22241D2012	KADABOHINASAIPAVAN	23
13	22241D2013	KASUMURU BHARAT KUMAR	21
14	22241D2014	MACHARLA SRINIVAS	19
15	22241D2015	MALLI SREENIVASULU	25
16	22241D2016	SHAIK ABDUL MUQEED	27
17	22241D2017	SHAIK ZABI ULLAH	19
18	22241D2018	SONWANE SAHILSHIVAJIRAO	30
19	22241D2019	LINGAM LAKSHMI NARAYANA	11

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M.Tech StructuralEngg. I yr-I Sem- GR22 2022-23			
Advanced Concrete Technology GR22D5004 (MID-II)			
S.No	**Roll No**	**Name of Student**	**Maximum Marks (30 M)**
1	22241D2001	ADDAGATLA MAHESHKUMAR	26
2	22241D2002	AHMED ABDUL AZEEM	26
3	22241D2003	BAIRAPAKA BHARAT	13
4	22241D2004	BARLAPUDI ACHSAHKEERTHANA	25
5	22241D2005	CHAKALI SOWMYA	25
6	22241D2006	CHAPPIDI NARESH	27
7	22241D2007	DANTHALA HARIDEEPKUMAR	25
8	22241D2008	DEVIREDDY ANISH	25
9	22241D2009	DHARAVATHNAGENDAR	23
10	22241D2010	GANGAPURAM SUSHANTH REDDY	27
11	22241D2011	JEREPOTHULARAVALIKA	21
12	22241D2012	KADABOHINASAIPAVAN	25
13	22241D2013	KASUMURU BHARAT KUMAR	18
14	22241D2014	MACHARLA SRINIVAS	21
15	22241D2015	MALLI SREENIVASULU	25
16	22241D2016	SHAIK ABDUL MUQEED	28
17	22241D2017	SHAIK ZABI ULLAH	24
18	22241D2018	SONWANE SAHILSHIVAJIRAO	27
19	22241D2019	LINGAM LAKSHMI NARAYANA	18

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 7-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: **Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 1 Duration of Lesson: 1hr

Lesson Title: Concrete making materials

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the importance of cement in concrete.

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Types of cements
- Cement making process
- Ingredients of cement

Assignment / Questions: (1 & 1) 1. Discuss about types of cement.
(1 & 1) 2. Explain about making of cement..

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 7-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: **Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 2 Duration of Lesson: 1hr

Lesson Title: Bogue's compounds

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Importance of Bogue's compounds in the strength of concrete.

TEACHING AIDS : white board, Different color markers
TEACHING POINTS :

- Bogue's compounds
- Calculation of Bogue's compounds

Assignment / Questions: (1 & 1) 1. What are bogue's compounds?
(1 & 1) 2. Explain the calculation of bogue's compounds

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 8-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech(Structural Engineering)Year: I

Course/Subject:**Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 3 Duration of Lesson: 1hr

Lesson Title: Hydration process

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand Hydration process

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Hydration process

Assignment / Questions: (1& 1) 1. Explain about hydration of cement

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 09-11-2022

Semester : II **Unit – I Concrete making materials**

Name of the Program: M.Tech(Structural Engineering) Year: I

Course/Subject: **Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty:.Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 4 Duration of Lesson: 1hr

Lesson Title: Alkali Aggregate Reaction

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Impact of Alkali Aggregate Reaction

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Alkali Aggregate Reaction

Assignment / Questions: (1& 1) 1. What is AAR?
(1& 1) 2. Explain the impact of AAR on properties of concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 14-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech(Structural Engineering) Year: I

Course/Subject:**Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 5 Duration of Lesson: 1hr

Lesson Title: Mineral admixture

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Different types of mineral admixtures

2. Impact of mineral admixtures on fresh and hardened concrete properties of concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Types of mineral admixtures
- How to improve the properties of concrete using mineral admixtures

Assignment / Questions: (1& 1) 1. What is are different types of mineral admixtures?
(1& 2) 2. Explain the impact of mineral admixtures on the properties of concrete.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 14-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject:**Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 6 Duration of Lesson: 1hr

Lesson Title: Chemical admixtures

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Different types of chemical admixtures
2. Impact of chemical admixtures on the properties of concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Types of chemical admixtures
- Impact of chemical admixtures on the properties of concrete

Assignment / Questions: (1 & 1) 1. List the types of chemical admixtures
(1 & 2) 2. Explain the importance of chemical admixtures on the properties of concrete
.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 15-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject:**Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty:Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 7 Duration of Lesson: 1hr

Lesson Title: Chemistry of Portland cement manufacture

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand about the chemistry of Portland cement .

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Explain the chemistry of Portland cement.

Assignment / Questions: (1& 1) 1. Explain about the chemistry of Portland cement.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 16-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech (Structural Engineering) Year: II

Course/Subject:**Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty:Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 8 Duration of Lesson: 1hr

Lesson Title: Hydration of calcium silicate phases

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Discuss about the hydration of calcium silicate phases

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Hydration of calcium silicate phases

Assignment / Questions: (1& 1) 1. Explain about hydration of calcium silicate phases

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 21-11-2022

Semester : I **Unit – I Concrete making materials**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject:**Advanced Concrete Technology** Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 9 Duration of Lesson: 1hr

Lesson Title: Hydrated aluminates, ferrite.
.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand about the hydrated aluminates and ferrite

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Hydrated aluminates and Ferrite

Assignment / Questions: (1& 1) 1. Explain about the hydrated aluminate and ferrite.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 21-11-2022

Semester : I **Unit- IConcrete making materials**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 10 Duration of Lesson: 1hr

Lesson Title: Sulphate phases

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand about sulphate phases

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Sulphate phases

Assignment / Questions: (1 & 1) 1. Discuss about sulphate phases.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 22-11-2022

Semester : I **Unit- II Fresh and Hardened Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 11 Duration of Lesson: 1hr

Lesson Title: Workability test on fresh concrete .

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Definition of workability
2. Tests on fresh concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Workability
- Tests on workability

Assignment / Questions: (1 & 1) 1. Define workability and explain the workability tests.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:28-11-2022

Semester : I **Unit- I Fresh and Hardened Concrete**
Name of the Program: M.Tech (Structural Engineering)Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 12 Duration of Lesson: 1hr

Lesson Title: Segregation and bleeding

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Define segregation and bleeding
2. Impact of segregation and bleeding

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Segregation
- Bleeding

Assignment / Questions: (1 & 1) 1. Define segregation and bleeding

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 28-11-2022

Semester : I **Unit- II Fresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 13 Duration of Lesson: 1hr

Lesson Title: Hardened concrete and Abrams law

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the properties of hardened concrete.
2. Understand the Abrams law.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Hardened concrete
- Abrams law

Assignment / Questions: (2 &2) 1. Explain about properties of hardened concrete
(2 &2) 2. Discuss about Abrams law

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 29-11-2022

Semester : I **Unit- IIFresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 14 Duration of Lesson: 1hr

Lesson Title: Gel space ratio, maturity concept

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand gel space ratio
2. Understand maturity concept.

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Gel space ratio and Abrams law

Assignment / Questions: (2 & 2) 1. Explain about gel space ratio and Abrams law

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 30-11-2022

Semester : I **Unit- IIFresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 15 Duration of Lesson: 1hr

Lesson Title: Stress behaviour

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the stress behavior of concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Stress behavior of concrete

Assignment / Questions: (2 & 2) 1. Discuss about stress behavior of concrete
.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 05-12-2022

Semester : I **Unit- IIFresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 16 Duration of Lesson: 1hr

Lesson Title: Creep

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the creep in concrete

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Creep in concrete

Assignment / Questions: (2 & 2) 1. Explain about creep in concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 05-12-2022

Semester : I **Unit- IIFresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 17 Duration of Lesson: 1hr

Lesson Title: Shrinkage

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the shrinkage in concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Shrinkage in concrete

Assignment / Questions: (2 & 2) 1. Explain about shrinkage in concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 06-12-2022

Semester : I **Unit- IIFresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 18 Duration of Lesson: 1hr

Lesson Title: Durability tests on concrete.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Durability tests on concrete

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Different tests on durability tests on concrete

Assignment / Questions: (2 & 2) 1. Explain about durability tests on concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:7-12-2022

Semester : I **Unit- IIFresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 19 Duration of Lesson: 1hr

Lesson Title: Hardened properties of concrete

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Hardened properties of concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Hardened properties of concrete

Assignment / Questions: (2&2) 1. Explain about hardened properties of concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

Gokaraju Rangaraju Institute of Engineering and Technology
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LESSON PLAN

Academic **Y**ear : 2022-23 Date:12-12-2022

Semester : I **Unit- IIFresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 20 Duration of Lesson: 1hr

Lesson Title: NDT methods

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

List different methods of NDT

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- NDT Methods

Assignment / Questions: (2&2) 1. Discuss about different methods of NDT

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 12-12-2022

Semester : I **Unit-II Fresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 21 Duration of Lesson: 1hr

Lesson Title: NDT Test-Rebound Hammer

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand about Rebound Hammer

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Procedure of Rebound Hammer test

Assignment / Questions: (2&2) Explain about Rebound hammer test procedure

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:13-12-2022

Semester : I **Unit-II Fresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 22 Duration of Lesson: 1hr

Lesson Title: NDT-UPV test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

NDT UPV Test

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- UPV Test procedure

Assignment / Questions: (2 & 2) 1. Explain about NDT UPV test procedure

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 14-12-2022

Semester : I **Unit-II Fresh and Hardened concret**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 23 Duration of Lesson: 1hr

Lesson Title: NDT UPV TEST

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

NDT UPV TEST

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- NDT UPV TEST

Assignment / Questions: (2 & 2) How to assess SHMof existing structure

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 19-12-2022

Semester : I **Unit-II Fresh and Hardened concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 24 Duration of Lesson: 1hr

Lesson Title: Micro structure and strength

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Micro structure and strength of concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Micro structure
- Strength

Assignment / Questions: (2 & 2) 1. Explain about Micro structure and strength of concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 19-12-2022

Semester : I **Unit-III High Strength Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 25 Duration of Lesson: 1hr

Lesson Title: High strength concrete

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand High strength concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- High strength concrete

Assignment / Questions: (3 & 3) 1. Explain about High strength concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 20-12-2022

Semester : I **Unit-III High strength concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 26 Duration of Lesson: 1hr

Lesson Title: High Performance Concrete

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand High Performance Concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- High Performance Concrete

Assignment / Questions: (3 & 3) 1. Explain about High Performance Concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 21-12-2022

Semester : I **Unit-III High Strength Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 27 Duration of Lesson: 1hr

Lesson Title: Difference between HSC and HPC

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the difference between HSC and HPC

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Difference between HSC and HPC

Assignment / Questions: (3 & 3) 1. Distinguish between HSC and HPC.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 02-01-2023

Semester : I **Unit-III High Strength Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 28 Duration of Lesson: 1hr

Lesson Title: Use of NANO materials

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the use of NANO materials

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Use of NANO materials

Assignment / Questions: (3 & 3) 1. Discuss about NANO materials use.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:02-01-2023

Semester : I **Unit-III High strength concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 29 Duration of Lesson: 1hr

Lesson Title: Manufacture and design of HSC using Erintroy and Shaklok method

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the Manufacture and design of HSC using Erintroy and Shaklok method
TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Manufacture and design of HSC using Erintroy and Shaklok method

Assignment / Questions: (3 & 3) 1. Explain about Manufacture and design of HSC using Erintroy and Shaklok method.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:03-01-2023

Semester : I **Unit-III High Strength Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 30 Duration of Lesson: 1hr

Lesson Title: Ultra High Strength Concrete

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand about Ultra High Strength Concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Ultra High Strength Concrete

Assignment / Questions: (3&3) 1. Explain about Ultra High Strength Concrete

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:04-01-2023

Semester : I **Unit-III High strength concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 31 Duration of Lesson: 1hr

Lesson Title: Requirements and properties of HPC

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1.Understand the requirements and properties of HPC

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Requirements and properties of HPC

Assignment / Questions: (3&3) 1. Explain the Requirements and properties of HPC

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 09-01-2023

Semester : I **Unit-III High strength concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 32 Duration of Lesson: 1hr

Lesson Title: Design of HSC using IS method

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the Design of HSC using IS method.

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Design of HSC using IS method

Assignment / Questions: (3 & 3) 1. Explain the Design of HSC using IS method

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 09-01-2023

Semester : I **Unit-III High Strength Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 33 Duration of Lesson: 1hr

Lesson Title: Mix design of HSC

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Design the HSC

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Mix design problem

Assignment / Questions: (3&3) 1. Design the HSC mix for the given data.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 10-01-2023

Semester : I **Unit-III High strength concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 34 Duration of Lesson: 1hr

Lesson Title: HSC Mix design problem

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Design the HSC mix

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- HSC mix design proble

Assignment / Questions: (3&3) 1. Design the HSC mix for the given data.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 11-01-2023

Semester : I **Unit-III High Strength Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 35 Duration of Lesson: 1hr

Lesson Title: Mix design problem

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Design the HSC mix.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- HSC mix design problem

1. Assignment / Questions: (3&3) 1. Design the HSC mix for the given data using IS method

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:16-01-2023

Semester : I **Unit-IV Special Concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 36 Duration of Lesson: 1hr

Lesson Title: Introduction about Special Concretes.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the different types of special concretes

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Different types of special concretes

Assignment / Questions: (4&4) 1. List the different types of special concretes.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 04-01-2023

Semester : I **Unit-IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 37 Duration of Lesson: 1hr

Lesson Title: Self-Compacting Concrete(SCC). Requirements, guidelines, advantages and applications.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the Self-Compacting Concrete(SCC) requirements, guidelines, advantages and applications.

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TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Self-Compacting Concrete(SCC). Requirements, guidelines, advantages and applications.

Assignment / Questions: (4&4) 1. Explain the Self-Compacting Concrete(SCC) requirements, guidelines, advantages and applications.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 17-01-2023

Semester : I **Unit-IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 38 Duration of Lesson: 1hr

Lesson Title: Mix design of SCC by NANSU method

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the Mix design of SCC by NANSU method

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Mix design of SCC by NANSU method

Assignment / Questions: (4 & 4) 1. Explain the procedure of Mix design of SCC by NANSU method

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 18-01-2023

Semester : I **Unit-IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 39 Duration of Lesson: 1hr

Lesson Title: Polymer Concrete. Requirements, guidelines, advantages and applications

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the Polymer Concrete requirements, guidelines, advantages and applications

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Polymer Concrete. Requirements, guidelines, advantages and applications

Assignment / Questions: (4 & 4) 1. Explain about Polymer Concrete requirements, guidelines, advantages and applications.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 23-01-2023

Semester : I**Unit-IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 40 Duration of Lesson: 1hr

Lesson Title: Fiber Reinforced Concrete. Requirements, guidelines, advantages and applications.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand Fiber Reinforced Concrete requirements, guidelines, advantages and applications.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Fiber Reinforced Concrete. Requirements, guidelines, advantages and applications.

Assignment / Questions: (4&4) 1.Explain the Fiber Reinforced Concrete requirements, guidelines, advantages and applications.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 23-01-2023

Semester : I **Unit-IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 41 Duration of Lesson: 1hr

Lesson Title: Reactive Powder Concrete requirements, guidelines, advantages and applications.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the Reactive Powder Concrete requirements, guidelines, advantages and applications.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

Reactive Powder Concrete. Requirements, guidelines, advantages and applications.

Assignment / Questions: (4&4) 1. Explain the Reactive Powder Concrete requirements, guidelines, advantages and applications.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 24-01-2023

Semester : I **Unit-IV Special Concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 42 Duration of Lesson: 1hr

Lesson Title: Geo Polymer Concrete. Requirements, guidelines, advantages and applications.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the Geo Polymer Concrete requirements, guidelines, advantages and applications.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Geo Polymer Concrete. Requirements, guidelines, advantages and applications.

Assignment / Questions: (4&4) 1.Explain the Geo Polymer Concrete requirements, guidelines, advantages and applications.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 25-01-2023

Semester : I **Unit-IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 43 Duration of Lesson: 1hr

Lesson Title: Light weight Concrete. Requirements, guidelines, advantages and applications.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the Light weight Concrete requirements, guidelines, advantages and applications.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

Light weight Concrete. Requirements, guidelines, advantages and applications.

Assignment / Questions: (4&4) 1. Explain the Light weight Concrete requirements, guidelines, advantages and applications.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 30-01-2023

Semester : I **Unit- IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 44 Duration of Lesson: 1hr

Lesson Title: Bacterial Concrete. Requirements, guidelines, advantages and applications.

INSTRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:
Understand the Bacterial Concrete requirements, guidelines, advantages and applications.
TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Bacterial Concrete. Requirements, guidelines, advantages and applications.

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :
Assignment / Questions: (4&4) 1. Explain the Bacterial Concrete requirements, guidelines, advantages and applications.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 30-01-2023

Semester : I **Unit-IV Special concretes**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 45 Duration of Lesson: 1hr

Lesson Title: Mix design problems

INSTRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:

1. Understand the mix design of special concretes

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Mix design problems

Assignment / Questions: (4&4) 1.Explain the mix design problems.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

LESSON PLAN

Academic **Y**ear : 2022-23 Date: 31-01-2023

Semester : I **Unit-IV Mix design problems**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 46 Duration of Lesson: 1hr

Lesson Title: Mix design problems

INSTRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:

1. Understand the principle of sub-structuring.

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Mix design problems

Assignment / Questions: (4&4) 1. Explain the mix design procedure of special concretes.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 01-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 47 Duration of Lesson: 1hr

Lesson Title: Introduction about formwork for concrete

INSTRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:

1. Understand about the importance of formwork for concrete

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Introduction about formwork for concrete

Assignment / Questions: (5 & 5) 1. Explain the importance of formwork for concrete.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 06-02-2023

Semester : I **Unit-V Formwork for concrete**
Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 48 Duration of Lesson: 1hr

Lesson Title: Materials and structural requirements

INSTRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:

1. Understand the material required for formwork and structural requirements.

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Materials and structural requirements

Assignment / Questions: (5&5) 1. Discuss about the Materials and structural requirements of formwork

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 02-01-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 49 Duration of Lesson: 1hr

Lesson Title: – Formwork systems

INSTRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:

1. Understand the Formwork systems.

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Formwork systems

Assignment / Questions: (5 & 5) 1. Explain about Formwork systems

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 07-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 50 Duration of Lesson: 1hr

Lesson Title: Connections

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

- Know about the importance of connections in formwork.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Connections

Assignment / Questions: (5 & 5) 1.Discuss on various connections in Formwork

-

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date:08-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 51 Duration of Lesson: 1hr

Lesson Title: Specifications.

STRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:

- Know about the specifications for formwork

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Specifications

Assignment / Questions: (5 & 5) 1. Explain about specifications related to formwork.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 13-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I
Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 52 Duration of Lesson: 1hr

Lesson Title: Slip forms

INSTRUCTIONAL/LESSON OBJECTIVES:
On completion of this lesson the student shall be able to:

1. Understand the different types of slip forms

TEACHING AIDS : white board, Different colour markers
TEACHING POINTS :

- Slip forms

Assignment / Questions: (5 & 5) 1. Explain different types of forms and their importance.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 13-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 53 Duration of Lesson: 1hr

Lesson Title: Permanent formwork

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Understand the importance of permanent formwork

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

• Permanent formwork	

Assignment / Questions: (5 & 5) 1.Explain about permanent formwork.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 14-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 54 Duration of Lesson: 1hr

Lesson Title: Latest formwork

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Know about latest formwork

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Latest formwork

Assignment / Questions: (5 & 5) 1.Discuss about latest formwork.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 15-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 55 Duration of Lesson: 1hr

Lesson Title: Design of formwork

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the importance of designing formwork

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Design of formwork

Assignment / Questions: (5 & 5) 1.Explain about design of formwork

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 20-02-2023

Semester : I **Unit-V Design of formwork**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 56 Duration of Lesson: 1hr

Lesson Title: Shoring and Reshoring

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the importance of shoring and reshoring

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Shoring and Reshoring

Assignment / Questions: (5 & 5) 1.Discuss about shoring and reshoring.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 20-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 57 Duration of Lesson: 1hr

Lesson Title: Removal of forms

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the procedure of removal of formwork.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Removal of formwork

Assignment / Questions: (5 & 5) 1.Discuss about removal of formwork.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 21-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 58 Duration of Lesson: 1hr

Lesson Title: Failure of formwork

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the reasons for failure of formwork

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Failure of formwork

Assignment / Questions: (5 & 5) 1.Discuss about failure of formwork.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 22-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 59 Duration of Lesson: 1hr

Lesson Title: Case studies

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the reasons for failure of formwork by considering a case study.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Case study

Assignment / Questions: (5 & 5) 1.Explain the reasons for failure of formwork and suggestions for prevention of failure by considering an example.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 27-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 60 Duration of Lesson: 1hr

Lesson Title: Case studies

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the reasons for failure of formwork by considering a case study.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Case study

Assignment / Questions: (5 & 5) 1.Explain the reasons for failure of formwork and suggestions for prevention of failure by considering an example.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 27-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 61 Duration of Lesson: 1hr

Lesson Title: Case studies

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the reasons for failure of formwork by considering a case study.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Case study

Assignment / Questions: (5 & 5) 1.Explain the reasons for failure of formwork and suggestions for prevention of failure by considering an example.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.

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LESSON PLAN

Academic **Y**ear : 2022-23 Date: 28-02-2023

Semester : I **Unit-V Formwork for concrete**

Name of the Program: M.Tech (Structural Engineering) Year: I

Course/Subject: Advanced Concrete Technology Course Code: **GR22D5004**

Name of the Faculty: Dr.V.Mallikarjuna Reddy. Dept.: Civil Engineering

Designation: PROFESSOR

Lesson No: 62 Duration of Lesson: 1hr

Lesson Title: Case studies

.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

Understand the reasons for failure of formwork by considering a case study.

TEACHING AIDS : white board, Different colour markers

TEACHING POINTS :

- Case study

Assignment / Questions: (5 & 5) 1.Explain the reasons for failure of formwork and suggestions for prevention of failure by considering an example.

Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos.