Dr. J.J.Magdum Trust's

Dr.J.J.Magdum College of Engineering, Jaysingpur

STUDENTS INFORMARTION MANUAL
Final Year B.Tech (2024-25) (Sem-I)

Department of Civil Engineering

Name of Student   :

P.R.N.Number   :

Roll Number   :

Division   :

Academic Year   :

Mobile Number   :

E-mail ID   :

Institute Information

Dr J J Magdum College of Engineering was established by Dr J J Magdum Trust, Jaysingpur in the year 1992 with an objective to promote the cause of higher education. The institute is approved by All India Council of Technical Education (AICTE), New Delhi and Government of Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech program in Mechanical, Civil, Computer Science Engineering, Electronics & Tele-Communication, Information Technology and M. Tech program in Civil Engineering-Construction Management.

Undergraduate

Programme

Branch	Degree	Intake
Civil Engineering	B.Tech. (Civil Engineering)	60
Mechanical Engineering	B.Tech. (Mechanical Engineering)	60
Computer Science & Engineering	B.Tech.. (Computer Science & Engineering)	60
Information Technology	B.Tech. (Information Technology)	60
Electronics & Telecommunication Engg.	B.Tech. (Electronics & Telecommunication Engg)	60

Post Graduate Programme

Branch	Degree	Intake
Civil(Construction Management) Engineering	M.Tech.(Civil-Construction Management)	18

Dr.J.J.Magdum Trust's
Dr.J.J.Magdum College of Engineering
Gat No. (314/330), Shirol – Wadi Road,(Agar Bhag),
Jaysingpur : 416101, Tal : Shirol, Dist : Kolhapur. State : Maharashtra
Website: www.jjmcoe.ac.in, E-mail: principal@jjmcoe.ac.in

Vision of Institute

To be a Leading academic organization, creating skilled and Ethical Human Resources by leveraging Technical Education for Sustainable Development of Society.

Mission of Institute

- To promote learnability of all stakeholders
- To empower rural youth to be competent in technical education and imbibe ethical values.
- To contribute to local social and economic context, leading to satisfied stakeholders.

Quality Policy

We strive for continual improvement in our performance through methodical academic monitoring, student participation, and use of the innovative teaching-learning processes.

DEPARTMENT OF CIVIL ENGINEERING

The Department of Civil Engineering was established in the year 1992 with a sanctioned intake of 60 along with the establishment of institute intake increases 120 in 2011-12. P.G. Course in Construction & Management started in 2010-11. The department has a good intermingle of experienced and young faculty which works as a team to strengthen the department.

Vision of Department

To contribute to the growth of technical education by providing competent technical manpower with high ethical values.

Mission of Department

To prepare students of high quality with sound knowledge of both theory and practice in Civil Engineering and also exposing them to latest technology in the industry

Programme Educational Objectives (PEO's)

1. To train students with good of knowledge in core areas of Information Technology and related engineering so as to analyze, design, and synthesize data and technical concepts.
2. To inculcate in students to maintain high professionalism and ethical standards, effective oral and written communication skills, to work as part of teams.
3. To provide our graduates with learning environment awareness of the life-long learning needed for a successful professional career and to introduce them to written ethical codes and guidelines, perform excellence, leadership and demonstrate good citizenship.
4. To provide students with academic environment that is aware of excellence, leadership, entrepreneurship, ethical responsibility and ability to work in multidisciplinary teams.
5. To train students with excellent scientific and engineering knowledge so as to understand, analyze, design and create products and solutions for Software engineering problems.

Programme Outcomes (PO's)

At the end of successful completion of program, the graduates will be able to,

1. **Engineering Knowledge**: Apply knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering pr
2. **Problem Analysis**: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an under-standing of the limitations.
6. **The Engineer and Society**: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability**: Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork**: Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear
11. **Project Management and Finance**: Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary environment.
12. **Lifelong Learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological

Program Specific Outcomes (PSO)

1. A board education is necessary to understand practical problems and to suggest the best possible   and economical solution for the problem.
2. An ability to function in multidisciplinary teams.
3. An ability to succeed in competitive examination in government and private organizations after successful accomplishment (Degree) by professional development and/or Industrial training course(s) certification.

STUDENTS ROLE

As our society/ nation grows & becomes technologically more strong / complex, it needs more trained Engineers. Students can contribute to this professional growth by playing an effective & disciplined role during their studies.

Responsibilities:

1. Punctuality, 100% Attendance & Active participation in All Academic Activities
2. Self-Discipline & good relations with other students, teaching & support staff.
3. Positive attitude, motivation and technical thinking.
4. Participation in Co-Curricular & Extra-Curricular activities.
5. Always carrying Identity Card & following the College Dress Code.
6. Pursuing all-round personality development with good generic skills.
7. Following the Code-of-Conduct by the Department, Institute & University.

Code-of-Conduct:

1. Coming late to Lectures/Practical's, common off, leave without permission is serious offence.
2. Roaming in the campus during academic work or disturbing the campus activities through shouting/ misconduct is not permitted.
3. Use of personal unauthorized electronic gadgets in department premises is objectionable.
4. Attendance less than 75% will lead to semester defaulter & make you ineligible for Exams.
5. Any form of violence, ragging, use of tobacco, alcohol or drugs on campus are serious offences punishable with rustication from the institute &/ legal action.

Let us all- Society, parents, teachers and students join hands & put our best efforts to imbibe the above mentioned behavior in our students.

Laboratory and Classroom Instructions

Laboratory instructions:

- Handle all Devices /equipments carefully
- Follow safety procedures & avoid damage to self and equipment
- Inform to respective faculty before beginning your experiment
- Help to conserve energy, Switch off the equipments tubes & fans before leaving the laboratory
- Inform the lab assistant or lab in-charge when any fault arises during the performance of an experiment
- Report any not working equipment to the lab instructor; don''t open/ remove the cover/ attempt to repair any equipment.
- Do not move the instruments from one laboratory to another , without permission

Classroom instructions:

- Maintain silence in class rooms
- Don''t write anything on seating bench and walls of classroom.
- Keep your mobiles switched off
- Attend classes regularly and be punctual for your classes.
- Your reason of absence should be timely informed to your class teacher with written application.
- Help to conserve energy, Switch off fans and tubes before leaving the classroom.
- Keep the Classrooms clean

Institute Academic Planner (2024- 2025 Part- I)

Sr. No.	Section/ Head	Activity	Date
1	SUK Calender	Start of academic year- SY, TY, B.Tech & M.Tech	1-Jul-2024
2	NSS	One day cleaning activity at college campus.	15-Jul-2024
3	NSS	One day cleaning activity at adopted Village(Jambhali)	20-Jul-2024
4	R&D	Expert Session on " Selecting the good project topic and writing synopsis " (Session to be conducted by each department)	20-Jul-2024
5	FY Department/Registrar	BoS First Year B.Tech	25-Jul-2024
6	R&D	Synopsis presentation and DRC meeting for project synopsis approval	31-Jul-2024
7	NSS	Tree Plantation Program	3-Aug-2024
8	Respective Department/Registrar	BoS SY/TY/ B.Tech	Second Week of August
9	JJM Trust	Independence Day	15-Aug-2024
10	Exam Cell	CIE-I (SY, TY & B.Tech)	16 to 17-Aug-2024
11	R&D	SORT Inauguration & Expert session on research topic	20-Aug-2024
12	Women Cell	Inauguration of Women Cell to empower women/girls of the Institute by conducting various activities	21-Aug-2024
13	Respective Department	Result Decleration CIE-I	23-Aug-2024
14	FY Department	Induction/Orientation of FY Students	26 to 31-Aug-2024**
15	Respective Department	Parents Meet	31-Aug-2024
16	Respective Department	Advisory board meeting	Last Week of August
17	AI&DS	Two-day Workshop for faculty on T.Y. Syllabus training of AIDS	Last Week of August
18	FDC	One day workshop on induction program for newly appointed faculty	Aug-24
19	Dean Academics	Academic Council	First Week of September

20	R&D	First assessment of project (Introduction and literature review presentation) 8/31/2024	2-Sep-2024
21	R&D	Expert session on " Research publication" (Session to be conducted by each department)	3-Sep-2024
22	R&D	Expert Lecture for faculty & students on IPR	6-Sep-2024
23	NSS	Collection of Nirmalya during Ganesh Festival	12 to 17-Sep-2024
24	R&D	Expert Session on Patent Drafting Process for Final Year B.Tech and MCA students	13-Sep-2024
25	R&D	SORT activity-II	21-Sep-2024
26	Women Cell	One day session on to make aware all the ladies/girls about their health by Fitness Instructor	21-Sep-2024
27	Exam Cell	CIE-II (SY, TY & B.Tech)	30-Sep-2024
28	CSE	Two-day Workshop for faculty on Data Analytics	Sep-24
29	Exam Cell	CIE-II (SY, TY & B.Tech)	1-Oct-2024
30	R&D	Second assessment of project (Methodology and future work presentation)	5-Oct-2024
31	Respective Department	Result Decleration CIE-II	7-Oct-2024
32	Alumni Cell	Alumni Meet	13-Oct-2024
33	Women Cell	Workshop on any activity ralated environmental awareness among all the students/faculty/staff by nature lover/ ecologist/ coservationist	19-Oct-2024
34	ENTC	One day workshop for faculty on 3D printing	Oct-24
35	CSE	Two-day Workshop on Linux OS for non-teaching staff	Oct-24
36	MCA	One day Workshop on cloud computing for faculty	Oct-24
37	FDC	One week STTP in coordination with any two departments	Nov-24
38	SUK Calender	Semester End (SY, TY & B.Tech)	30-Nov-2024
39	SUK Calender	Semester End- M.Tech	7-Dec-2024
40	JJM Trust	Dr. J.J.Magdum Jayanti	31-Dec-2024
	Civil	Two-day workshop on For Faculty Structural health monitoring and audit of building	Last week of December

July-24						
SUN	**MON**	**TUE**	**WED**	**THU**	**FRI**	**SAT**
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Sr.No.	Date	Activity	Section/Head
1	1-Jul-2024	Start of academic year- SY, TY, B.Tech & M.Tech	NSS
2	15-Jul-2024	One day cleaning activity at college campus.	NSS
3	20-Jul-2024	One day cleaning activity at adopted Village(Jambhali)	R&D
4	20-Jul-2024	Expert Session on " Selecting the good project topic and writing synopsis " (Session to be conducted by each department)	R&D
5	31-Jul-2024	Synopsis presentation and DRC meeting for project synopsis approval	R&D

August-24						
SUN	**MON**	**TUE**	**WED**	**THU**	**FRI**	**SAT**
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Sr.No.	Date	Activity	Section/Head
1	3-Aug-2024	Tree Plantation Program	NSS
2	15-Aug-2024	Independence Day	JJM Trust
3	16 to 17-Aug-2024	CIE-I (SY, TY & B.Tech)	Exam Cell

4	16-Aug-2024	SORT Inauguration & Expert session on research topic 8/20/2024	R&D
5	17-Aug-2024	Inauguration of Women Cell to empower women/girls of the Institute by conducting various activities 8/21/2024	Women Cell
6	23-Aug-2024	Result Decleration CIE-I	Respective Department
7	31-Aug-2024	Parents Meet	Respective Department

September-24						
SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Sr.No.	Date	Activity	Section/Head
1	2-Sep-2024	First assessment of project (Introduction and literature review presentation) 8/31/2024	R&D
2	3-Sep-2024	Expert session on " Research publication" (Session to be conducted by each department)	R&D
3	6-Sep-2024	Expert Lecture for faculty & students on IPR	R&D
4	12 to 17-Sep-2024	Collection of Nirmalya during Ganesh Festival	NSS
5	13-Sep-2024	Expert Session on Patent Drafting Process for Final Year B.Tech and MCA students	R&D
6	21-Sep-2024	SORT activity-II	R&D
7	21-Sep-2024	One day session on to make aware all the ladies/girls about their health by Fitness Instructor	Women Cell
8	30-Sep-2024	CIE-II (SY, TY & B.Tech)	Exam Cell

October-24						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12

13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Sr.No.	Date	Activity	Section/Head
1	1-Oct-2024	CIE-II (SY, TY & B.Tech)	Exam Cell
2	5-Oct-2024	Second assessment of project (Methodology and future work presentation)	R&D
3	7-Oct-2024	Result Decleration CIE-II	Respective Department
4	13-Oct-2024	Alumni Meet	Alumni Cell
5	19-Oct-2024	Workshop on any activity ralated environmental awareness among all the students/faculty/staff by nature lover/ ecologist/ coservationist	Women Cell

Dean, Academics   Principal   Campus Director

Departmental Time table

Academic Year: 2023-24
Department: Civil Engineering
Class Room No.:B203
Class Teacher: Prof. Mrs. A. P. Chougule

Semesters: I
Class: B. tech
W.e.f.: 9/9/2024

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	TRE I	DCS I	QSV	EQ	EQ	--
10.30 am-11.30 am	SWM	QSV	EQ	SWM	TRE I	--
11.30 am -11.40 am	SHORT RECESS					
11.40 am -12.40 pm	DCS I	LACE	SWM	TRE I	DCS I	--
12.40 pm -01.40pm	LACE	EQ(T)	DCS I	QSV	SWM(T)	--
01.40 pm-02.30 pm	LONG RECESS					
02.30 pm-03.30 pm	A1 TRE I A2 QSV	A1 DCS I A2 LACE*	A1 QSV A2 TRE I	A1 LACE A2 DCS I	A1 Project A2 Project	--
03.30 pm-04.30 pm						--

Name of the Subject	Abb.	Name of Teacher	Place of Practical
Quantity Survey & Valuation (TH& PR)	QSV	Dr. D. B. Desai(Th+Pr.1,2)	Class room
Earthquake Engineering (TH & TUT)	EQ	Prof. R. S. Pawar (Th+Tut)	------
Design of Concrete Structure I (TH&PR)	DCS-I	Prof. K. G. Ghodake (Th.+Pr.1,2)	MT Lab
Transportation Engineering-I (TH&PR)	TRE-I	Prof. Mrs. A. P. Chougule (Th.+Pr.1,2)	Transportation Lab
Solid Waste Management(TH&TUT)	ELE-I	Dr. J. S. Lambe (Th.+TUT)	-----
Legal Aspects in Civil Engineering(TH&PR)	LACE	Prof. Mrs. D. A. Latthe (Th.+Pr.1) Dr. D. B. Desai (Pr. 2)*	-----

Final Year CIVIL ENGINEERING – CBCS PATTERN

Sr. No	Course (S	THEORY			TUTORIAL			PRACTICAL			THEORY				PRACTICAL			TERM WORK		
SEMESTER –VII																				
1	PCC-CV701	4	4	4	-	-	-	1	2	2	CIE 30 / ESE 70		100	40		-	-	2	25	10
2	PCC-CV702	3	3	3	1	1	1	-	-	-	CIE 30 / ESE 70		100	40		-	-	2	25	10
3	PCC-CV703	3	3	3	-	-	-	1	2	2	CIE 30 / ESE 70		100	40	As per BOS Guidelines	25	10	2	25	10
4	PCC-CV704	3	3	3	-	-	-	1	2	2	CIE 30 / ESE 70		100	40		25	10	2	25	10
5	PCE-CV705	3	3	3	1	1	1	-	-	-	CIE 30 / ESE 70		100	40		25	10	2	25	10
6	HM-CV706	2	2	2	-	-	-	1	2	2	-	-	-	-		-	-	2	25	10
7	SI-CV707	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	2	25	10
8	PW-CV708	-	-	-	-	-	-	1	2	2	-	-	-	-		-	-	2	50	20
	TOTAL	**18**	**18**	**18**	**2**	**2**	**2**	**5**	**10**	**10**			**500**			**75**			**225**	
SEMESTER -VIII																				
1	PCC-CV801	4	4	4	-	-	-	1	2	2	CIE 30 / ESE 70		100	40		25	10	2	25	10
2	PCC-CV802	3	3	3	-	-	-	1	2	2	CIE 30 / ESE 70		100	40	As per BOS Guidelines	-	-	2	25	10
3	PCC-CV803	3	3	3	-	-	-	1	2	2	CIE 30 / ESE 70		100	40		-	-	2	25	10
4	PCE-CV804	3	3	3	1	1	1	-	-	-	CIE 30 / ESE 70		100	40		-	-	-	-	-
5	PCE-CV805	3	3	3	1	1	1	-	-	-	CIE 30 / ESE 70		100	40		-	-	-	-	-
6	PCC-CV806	-	-	-	-	-	-	2	4	4	-	-	-	-		25	10	2	25	10
7	PW-CV807	-	-	-	-	-	-	2	4	4	-	-	-	-		100	40	2	50	20
	TOTAL	**16**	**16**	**16**	**2**	**2**	**2**	**7**	**14**	**14**			**500**			**125**			**175**	
	TOTAL	**35**	**35**	**35**	**3**	**3**	**3**	**12**	**24**	**24**			**1000**			**200**			**400**	

CIE- Continuous Internal Evaluation

ESE – End Semester Examination

SHIVAJI UNIVERSITY, KOLHAPUR

REVISED SYLLABUS

FINAL YEAR (B. Tech) CBCS

CIVIL ENGINEERING

To be introduced from the academic year 2021-22

(i.e. from June 2021) onwards

FINAL YEAR B.Tech Civil Semester VII
DESIGN OF CONCRETE STRUCTURES-I

Course	Teaching Scheme				Evaluation Scheme					
	L	T	P	Total credit	Scheme	Theory (Marks)		Practical (Marks)		
						Max	Min for Passing	Max	Min for Passing	
Design of Concrete Structures-I **(PCC-CV701)**	4	-	2	5	ISE	--	--	25	10	
					CIE	30	12	--	--	
					ESE	70	28	--	--	

ISE – In Semester Evaluation CIE – Continuous Internal Evaluation ESE – End Semester Evaluation

Course Objective:
1. To understand the concept of RCC structural design
2. To conceive the elementary deign of different structural elements.
3. To impart knowledge of strength determination of different kinds of R.C. elements using I.S. Code.

Course Outcome: After successful completion of course student will be able to
1. Understand the basic data (Basic Mechanics, Mathematics, and structural analysis) required for design of concrete structures.
2. Understand the design process of concrete structure
3. Understand the application of limit state method for structural element such as footing, column, beam slab, staircase etc.
4. Design the individual members and hence building.

SECTION- I

Unit : 1 (06)
Introduction to R.C.C., Stress-Strain behavior of concrete, Steel and R.C.C, Different design philosophies, Various Limits States, Characteristic Strength and Characteristic Load, Load Factor, Partial Safety Factors.

Unit : 2 (10)
Limit State of Collapse (Flexure) - Analysis and design of singly reinforced beam. Analysis and design of doubly reinforced beam, Analysis and design of symmetrical T and L beams.

Unit : 3 (08)
Limit state of collapse (shear and bond): Shear failure, Types of Shear reinforcement, Design of Shear reinforcement, Bond-types, Factors affecting bond Resistance, Check for development length. (No Numericals on bond)
SECTION- II

Unit : 4 (08)

a) Design of slabs: Cantilever Slab, Simply Supported One way slab, Simply Supported Two way slab with different support conditions as per IS:456-2000

b) Design of Simply Supported single flight and Dog legged staircase.

Unit:5 (08)

Design of Columns - General aspects, Effective length of column, Loads on column, Slenderness ratio for column, Maximum and Minimum eccentricity, Codal provisions, Design of short axially loaded columns, Design of columns subjected combined axial load and uniaxial bending using SP-16.

Unit : 6 (08)

Design of isolated rectangular column footing with constant depth subjected to axial load and moment.

Term work: At least one assignment on each unit consisting of four questions.

Text books :

1. IS 456-2000,SP-16 & Relevant Special publications of BIS
2. Limit state theory and Design –Karve and Shah , Structures publications, Pune
3. Reinforced Concrete Design – Limit state - A.K. Jain Nem Chand brothers, Roorkee
4. Fundamentals of Reinforced Concrete –Sinha and Roy, S. Chand and company Ltd. Ram Nagar, New Delhi
5. Reinforced Concrete Design- B.C. Punmia Laxmi publications New Delhi
6. Reinforced Concrete Design-M. L. Gambhir-Mc millan India Ltd. New Delhi

Reference Books

1. Limit State Design of Reinforced Concrete P.C.Varghese, Prentice Hall, New Delhi

Guidelines regarding question paper setting:

1. Section –I – Q.No-1 to Q.No-3 and Section –II – Q.No-4 to Q.No-6
2. All questions are Compulsory.
3. Internal option question are allowed, weightage of optional question should not be more than 30% of total marks i.e.21 marks out of 70 marks

Question No.	Based on Unit No.	Marks
1	1	12
2	2	12
3	3	11
4	4	12
5	5	12
6	6	11

ASSIGNMENT QUESTIONS

1. Explain Stress- stain behavior of concrete and steel

2. Differentiate between working stress method and limit state method.

3. Define the terms (i) Factored Load (ii) Limit state of serviceability (iii)Characteristic strength of concrete and steel (iii) Limit state of collapse.

4. Write note on partial safety factors.

5. A beam section 300mmx500mm deep is reinforced with a tension reinforcement of 3000sqmm, at an effective cover 30mm. Determine the ultimate moment of resistance of beam section. Use m20 concrete and Fe415 steel.

6. Design a singly reinforced beam with span of 5m to carry a dead load of 25KN/m and a working Live load 20KN/m. Use M20 concrete and Fe500 steel.

7. Derive stress block parameters for under-reinforced section.

8. Derive the parameters Xumax, Mu lim., Pulim, for M20 concrete & Fe 415steel

9. A RCC beam supports a Total UDL of 160 KN. The beam has 200mm width and 360mm effective depth. Determine the spacing of 8mm dia. Vertical stirrups. In addition to two main reinforcing bars of 16mm bent up at 45^0 to resist shear. Use M20 concrete and Fe 415 steel.

10. Describe the types of bonds

11. Write note on Limit state of serviceability

12. Explain IS: 456 Guidelines for control of deflection

13. Design a RCC floor slab for a room having inside dimensions 3.5mX 7.5m and supported on all sides by a 30cm thick brick wall. The superimposed load may be taken as 3 KN/sqm. Use M20 mix & HYSD bars.

14. Design a simply supported slab to cover a room with internal dimensions 4.5m x 5.5m and 230mm thick walls all around. Assume a live load of 3.0 KN/sqm and floor finish of 1KN/sqm. Use M20 concrete and Fe 415 steel. Assume that the slab corners of slab are free to lift.

15. The main stair of office building has to located in a stair measuring 3.50mx5.50m. The vertical distance between the floors is 3.75m. Design the dog-legged stair. The live load on the stair is 3KN/Sqm. Use M20concrete and Fe500 steel.

16. Derive the expression of determining the pitch of helix in a short axially loaded spiral column which satisfies the requirement of IS 456.

17. Design a short spiral column subjected to $P = 21$m using M 25 and Fe 415. The preliminary diameter of the column may be taken as 500 mm.

18. Describe the IS recommendations for design of footing

19. Design an isolated squre footing with uniform thickness for the column of size 350x350mm carrying an axial load of 800KN. The SBC of soil is 200Kn/sqm. Use M20 Concrete and Grade Fe 415 steel.

20. Design a rectangular Isolated sloped footing for a column of 360x660mm carrying an axial load of 2500KN. The SBC of soil is 280 KN/Sqm .Use M25 Concrete & Fe 415 steel. Sketch the reinforcement details.

SHIVAJI UNIVERSITY, KOLHAPUR
FINAL YEAR B.Tech Civil Semester VII
EARTHQUAKE ENGINEERING

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Total credit	Scheme	Theory (Marks)		Practical (Marks)	
						Max	Min for Passing	Max	Min for Passing
Earthquake Engineering (PCC-CV702)	3	1	-	4	ISE	--	--	25	10
					CIE	30	12	--	--
					ESE	70	28	--	--

ISE – In Semester Evaluation CIE – Continuous Internal Evaluation ESE – End Semester Evaluation

Course objectives:

1. To understand interior of earth and behavior of earth during earthquake.
2. To understand the concepts of mathematical modeling.
3. To understand dynamic behavior of structure.
4. To understand earthquake resistant philosophy of structure.
5. To understand modern techniques of earthquake resistant method.

Course Outcomes: After successful completion of course student will be able to

1. Prepare mathematical modeling of Single Degree of Freedom System.
2. Design earthquake resistant structure by applying various codal provisions related to seismic design
3. Know the concept of modern earthquake resistant techniques

SECTION-I

Unit:1   (05)

Elements of seismology – terminology, structure of earth, causes of an earthquake, plate tectonic theory, continental drift theory, elastic rebound theory, seismic waves, magnitude and intensity, methods of measurement, energy released, seismograph, strong motion earthquakes, accelogram, prominent earthquakes of India

Unit:2   (07)

Fundamentals of theory of vibration, free and forced vibrations (harmonic loading) of single degree of freedom systems. Undamped and viscously damped vibrations, equations of motion and solution, General dynamic loading Duhamel Integral, earthquake response of SDOF system

Unit:3   **(06)**

Response spectrum theory: Earthquake response spectrum, tripartite spectrum, construction of 6
design response spectrum, effect of foundation soil and structural damping on design spectrum,
evaluation of lateral loads due to earthquake on multistory buildings as per IS 1893– 2016 Part I

Unit : 4

Part A: (04)

Conceptual Design: Planning aspects, Load path, Stiffness and strength distribution, different structural system, liquefaction and settlement.

Part B: (05)

Earthquake Resistance Design Principles: Design philosophy, Behavior of RC building, ductility and ductile detailing of beam and columns using IS 13920.

Unit:5 (04)

Masonry Structures: Behavior of unreinforced masonry and reinforced masonry, RC bands, vertical reinforcement, openings, Provisions of I.S. 4326, Repairs and strengthening of masonry and RC members.

Unit:6 (05)

Introduction to Earthquake resistant modern techniques – Base Isolation- Elastomeric, Sliding, Combined.

Seismic Dampers - Friction Dampers, TMD, Visco elastic dampers.

Term work:

1) One assignment on each unit.
2) Calculation of seismic forces by using any FEM software or RESIST Software.

Text Book-

1. Earthquake Resistance Design of Structure – S. K. Duggal , Oxford Uni. Press
2. Earthquake Engineering- ManishShrikhandeand Pankaj Agarwal,Prentice Hall of India Pvt Ltd, New Delhi
3. Structural Dynamics - Mario Paz CBS Publication
4. Foundation Design Manual – N. V. Nayak, Dhanpatrai and sons, Delhi
5. Earthquake resistant design of structures by vinod hosur, wiley precise textbook series.
6. Earthquake Dynamics of Structures A primer, A K chopra earthquake engineering research institute
7. Elements of Earthquake Engineering – Jai Krishna, South Asian Pub. New Delhi
8. Earthquake Resistant Design of Masonry and Timber Structures – A.S. Arya
9. Earthquake Resistant Design of R. C. C. Structures – S. K. Gosh

Reference books :

1. Dynamics of Structures- Theory and Applications to Earthquake Engineering by A.K. Chopra – Prentice HallPublications.
2. Earthquake Resistant Structures –D.J. Dowrick John Wiley Publication
3. Dynamics of Structures – R. M. Clough and Ponian ,McGraw Hill co.New Delhi
4. Mechanical Vibrations – G. R. Grover Roorkee University, Roorkee. 7
5. Analysis and Design of Foundations for Vibrations – P. J. Moove. Oxford and I. B. H. Publication, Delhi

6. Manual of Earthquake Resistant Nonengineering Construction, University of Roorkee

7. Elements Seismology – Rochter

8. IITK-BMTPC Earthquake Tips, National Information Centre of Earthquake Engineering, IIT Kanpur.

9. Government of Maharashtra Earthquake resistant design of house guiding lines and assessment of damages.

10. IS 1893 -2016 – Part-I and IS 13920, IS 4326.

Guidelines regarding question paper setting:

1.   Section –I – Q.No-1 to Q.No-3 and Section –II – Q.No-4 to Q.No-6

2.   All questions are Compulsory

3.   Internal option question are allowed, weightage of optional question should not be more than 30% of total marks i.e.21 marks out of 70 marks

END SEMESTER EXAMINATION PAPER PATTERN

Question No.	Based on Unit No.	Marks
1	1	07
2	2	14
3	3	14
4	4	12
5	5	12
6	6	11

ASSIGNMENT QUESTION

2.   Discuss the behavior of the following masonry walls in seismic regions. (i) Unreinforced masonry wall(ii)   Reinforced Masonry wall(iii) Infill masonry wall.

3.   Draw the detailed sketch of (i) Different ways of beam jacketing as IS code and(ii) Placing of vertical bars and closed ties in columns as per IS code.

4.   With detail sketch explain the essential requirements to ensure box action in a masonry building

5.   Explain failures of masonry structures observed in past earthquakes & how will you improve

performance of masonry building.

6. Earthquake resisting features of unreinforced brick masonry structure
7. What is jacketing? Explain the jacketing of beams and column with Illustrative sketches
8. Define RC band? At what level in a masonry building would you provide them? Why?
9. Write a brief note on strengthening of masonry walls?
10. Describe briefly with neat sketches: 1)Stud Wall Construction 2)Timber Shear Panel Construction
11. Describe the construction procedure and precautions to be taken for brick- nogged timber frame construction
12. What is the influence of opening in masonrybuilding?
13. Differentiate (i) Seismograph Vs Seismogram (ii) S wave & Love wave (iii) center of mass & center of stiffness
14. An earthquake causes an average of 2.6 m strike-slip displacement over a 75 km long, 22 km deep portion of a transformed fault. Assuming the average rupture strength along the fault as 180 KPa, estimate the seismic moment and moment magnitude of the earthquake
15. Differentiate (i) Seismograph Vs Seismogram (ii) S wave & Love wave (iii) center of mass & center of stiffness
16. An earthquake causes an average of 2.6 m strike-slip displacement over a 75 km long, 22 km deep portion of a transformed fault. Assuming the average rupture strength along the fault as 180 KPa, estimate the seismic moment and moment magnitude of the earthquake
17. Draw the response graph of undamped free vibration SDOF system. Hence explain initial displacement, initial velocity, period and amplitude.
18. Derive the equation of motion and its solution for forced undamped 07
        vibration system.
19. A SDOF vibrating system is having following parameters.m = 200 kg, k = 160 N/m, c = 40 N – sec / m. Determine (i) the damping factor (ii) the natural frequency of damped vibration (iii) logarithmic decrement (iv) the ratio of two successive amplitudes & (v) the number of cycles after which the original amplitude is reduced to 50%.
20. Plan and elevation of a four-storey reinforced concrete office building is shown in Fig. 1.1. The details of the building are as follows. Number of Storey = 4 Zone = III
        Live Load = 3 kN/m2 Columns = 450 x 450 mm
        Beams = 250 x 400 mm Thickness of Slab = 150 mm
        Thickness of Wall = 120 mm Importance factor = 1.0
        Structure type = OMRF Building
        Determine design seismic lateral load and storey shear force distribution.
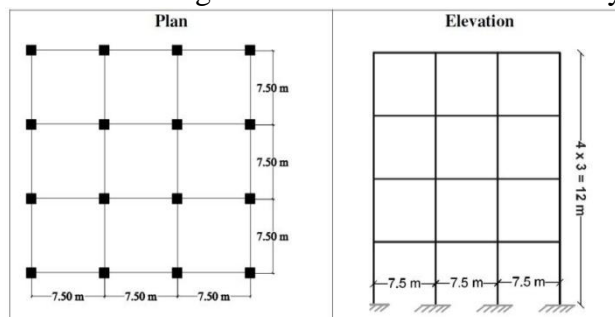
21. Philosophy of Earthquake Resistant Design. Give four virtue of good earthquake resistant design
22. Effect of structural irregularities on the performance of RC building during earthquake

SHIVAJI UNIVERSITY, KOLHAPUR
FINAL YEAR B.Tech Civil Semester VII
QUANTITY SURVEY AND VALUATION

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Total credit	Scheme	Theory (Marks)		Practical (Marks)	
						Max	Min for Passing	Max	Min for Passing
Quantity Survey and Valuation **(PCC-CV703)**	3	-	2	4	ISE	--	--	25	10
					CIE	30	12	--	--
					ESE	70	28	25	10

ISE – In Semester Evaluation CIE – Continuous Internal Evaluation ESE – End Semester Evaluation

Course Objectives:
1. To understand the basic skills in estimation of Civil Works.
2. To prepare specifications & rate analysis of various items.
3. To carry out the estimation for various Civil engineering structures.
4. To understand the valuation of Civil Engineering Structures.

Course Outcome: After successful completion of this course students will be able to:
1. Explain the importance of estimation in Civil Engineering works.
2. Prepare rate analysis of various items.
3. To estimate for various construction projects.
4. Explain importance of valuation in Civil Engineering works.

Section I

Unit : 1 (06)
a) General introduction to quantity surveying – purpose of estimates, Types of estimates - Detailed estimates & approximate estimates, purpose, various methods used for building and other civil engineering works such as bridge. Water supply, drainage, road project, school building, industrial sheds. Various items to be included in estimates.
b) Principles in selecting units of measurement for items , various units and modes of measurement for different trades, administrative approval & technical sanction of estimates, I.S. 1200, introduction to D.S.R.
c) Prime cost, provisional sum & provisional quantities.

Unit : 2 (06)
a) Specifications - Definition and basic principle of general and detailed Specifications (writing the detailed specification tor various Constructions should be covered in term work)
b) Analysis of rates, factors affecting the cost of materials, How to fix up the rate of items Task

Unit : 3 (06)

a) Measurement and abstract sheets and recordings, taking out quantity methods – Long wall- short wall method, Centre line method.

Section II

Unit : 4 (06)

a) Detailed estimate of building, R.C.C. Works, culverts, earthwork for canals, Roads including hill roads and other civil engineering works,
b) Preparation of schedule for steel as reinforcement.

Unit : 5 (06)

a) Valuation- Definition and Principles of valuation, Purposes. Definition of value, price & cost, Attributes of value, Different types of values.
b) Values and his duties, factors affecting the valuation of properties, Tangible and Intangible properties, Landed properties – freehold and leasehold properties, Different types of lease.
c) Valuation from yield and from life, Gross income and Net income, Outgoings, Capitalized value, Years purchase – single rate and dual rate, reversion value of land

Unit : 6 (06)

a) Methods of valuation - Rental method of valuation, direct comparison with capital value, valuation based on profit, valuation based on cost, Development method of valuation.
b) Rent – Definition, form of rent, different types of rent.
c) Depreciation – methods of depreciation: Straight line method, Constant percentage method, Sinking fund method and Quantity survey method, Obsolescence

Term Work:

1] Detailed specification for minimum ten civil engineering items. (One each from Roads, Irrigation works, Water Supply & Sanitation & seven from buildings)
2] Rate Analysis of ten civil engineering items.(Prepare excel sheet for minimum 5 items of works)
3] Detailed estimate of G + 1 residential Framed Structure.
4] Preparing detailed estimate for any one of the following:
a) A stretch of a road about 1 Km. long including earthwork.
b) A reach of canal about 1 Km. long.
c) A factory shed of steel frame.
5] Schedule of reinforcement for the following
a) Beams
b) Slab,
c) Staircase
d) Column & Column footing
6] Valuation reports for building of residential purpose or commercial purpose
7] Detailed estimation of building having 10 sq.m.area by using any software.

Text Books:

1. Quantity Surveying – P. L. Bhasin., S. Chand & Co-Ramnagar, Delhi-110055
2. Elements of Estimating and Costing – S. C. Rangwala. Charotar Publishing House - Opp Amul Dairy Court road Anand.388001 (west rly)India.
3. Civil Engineering, Contracts and Estimates – B. S. Patil. Universities Press Private Ltd. 3-5-819 Hyderguda, Hyderabad. 500029(A.P),India.
1. Estimating and Costing – B.N.Dutta. Dhanpat Rai & Sons. 1682, Nai Sarak, Delhi-110006
2. Estimating and Costing – Birdi Dhanpat Rai & Sons 1682, Nai Sarak, Delhi-110006
3. Estimating, Costing and Specification in civil engineering – Chakroborty M. 21 b, Bhabananda Road,Kolkata-700026
4. Valuation of real Properties – S. C. Rangwala Charotar Publishing House, opposite Amul dairy, court Road Anand. 388001.India
5. Standard specifications Volumes I & II (P. W. D. Maharashtra) Govt. of Maharashtra

Reference Books:

1. Professional Practice (Estimating and Valuation) – Roshan Nanavati (1984 Edition) U.B.S. Publishers, Distributers PVT. Ltd.5 Ansari road, New Delhi.
2. Standard specifications Volumes I & II (P. W. D. Maharashtra) Govt. of Maharashtra
3. C.P.W.D. specifications & schedules of rates.

Guidelines regarding question paper setting:

1. Section –I – Q.No-1 to Q.No-4, Q.No3 Compulsory, Solve any two from Q.No. 1/2/4 and Section –II – Q.No-5 to Q.No-8, Solve any two
2. Time allotted to solve 70 marks Q.Paper 03 Hours

End Semester Examination Paper Pattern

Question No.	Based on Unit	Marks
1	1	10
2	2	10
3	3 (Compulsory)	15
4	1,2,3	10
5	4	11
6	5	11
7	6	12
8	4,5,6	12

ASSIGNMENT QUESTION

Q1.

Estimate the Quantities for the combined footing given below, for the following items of work.

i) Earthwork in Excavation.

ii) P.C.C. for bed concrete in 1:3 :6.

iii) R.C.C.M-20 for footing and columns upto G.L. only.

iv) Total Steel reinforcement for footing and columns upto G.L. only. (Cover for reinforcement – 50 mm for footing and 30 mm for columns)

TRAPEZOIDAL COMBINED FOOTING
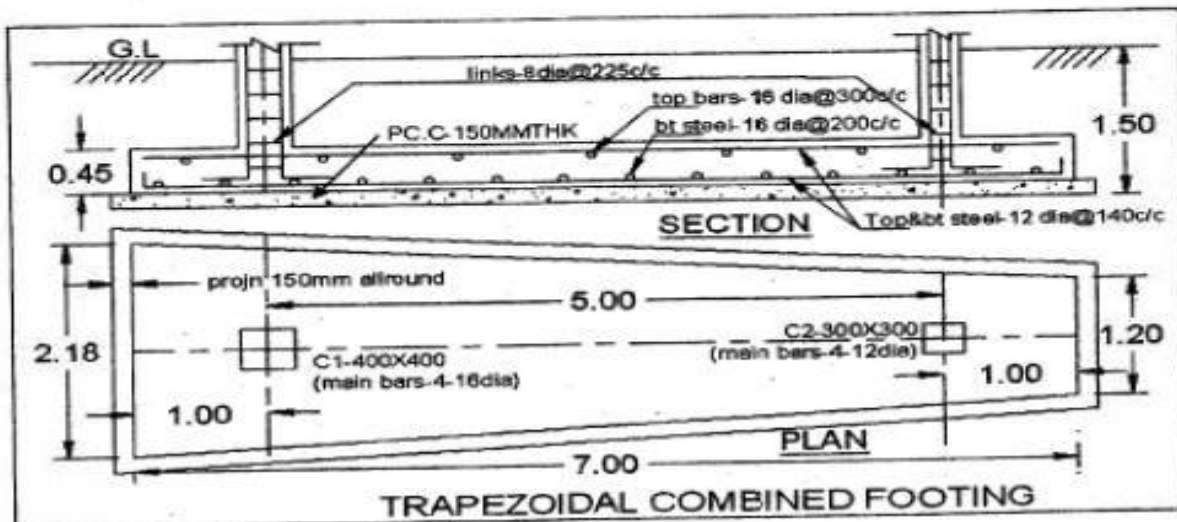
Q2.

What is I.S. 1200 ? What are the principles in selecting the units of measurement ? What are the rules for deductions for plastering work as per the code ?

Q3.

Differentiate between :

i) Plinth Area and Cubical Content method of Approximate Estimate.

ii) Contingencies and Work charged establishments

Q4.

Write the detailed specifications for Uncoursed Rubble masonary work.

Q5.

What is meant by Task work ? Explain its importance in rate analysis with suitable examples.

Q6.

An R.C.C. framed structure building having G + 1 storey is constructed on a plot having details :

i) Plot of land 500 sqm and its present rate is Rs. 3,000 per sqm.

ii) Net Yield = 10%

iii) B.U.A. is 350 sqm/floor @ construction rate of Rs. 7,000 per sqm

iv) Future life of building = 80 years

v) Repairs and maintenance @ 1/12 of gross rent

vi) Municipal taxes @ 20% of gross rent

vii) Property taxes @ 5% of gross rent

viii) Management and miscellaneous charges @ 8% of gross rent

ix) Insurance premium @ 1% of gross rent

x) Gross rent = Rs. 3.00 lacs p.a.

xi) Compounded Interest on sinking fund – 9%

Work out value of a property.

Q7. What are the various types of Rents?

Q8. Explain Rental method of Valuation.

Q9. Calculate the sinking fund to be deposited every year for an equipment which was purchased at Rs. 80,000/-. The life of the equipment is 8 years. Assume salvage value as 10% of the original value and rate of interest 8%.

Q10. Calculate book value on 5th and 6th year of the concrete mixer purchased at Rs. 80,000/-. The salvage value is 5% and life of mixer is 8 years. Use declining balance method

Q11. Explain different types of Biddings

Q12. What are the non conventional contracts?

Q13. Explain Indian Arbitration and conciliation Act 1996

Q14. Explain the purpose of Approximate estimates

Q15. What are the steps involved in Preparation of schedule for steel as reinforcement?

Q16. Prepare BBS for Beam With C/S 230 x 450 and 6 m in length. Assume any suitable data

Q17. Write wrote on Price Escalation

Q18. Calculate the following Quantities by both methods

   a) Earthwork in Excavation

   b) Concrete in foundation

   c) UCR in footing

Brickwork in Superstructure Assume wall thickness as 30 cm
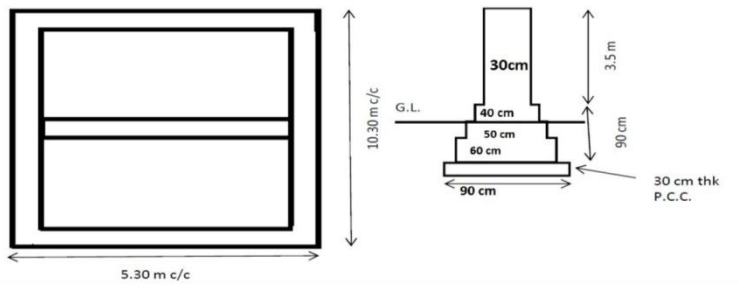
Q19. Explain Prime cost, provisional sums and provisional quantities with Example

Q20. Explain the purpose of Estimates?

Q21. What are the different types of Estimates?

Q22. Differentiate between General and detailed specifications?

Q23. Explain term Administrative Approval and Technical Sanction

Q24.
What is meant by sinking fund ? Derive the expression for sinking fund coefficient.

Q25.

A Tower Crane was purchased for Rs. 10 Lacs. Assume Salvage value of the crane as Rs. 1 lacs after 10 years. Find out its book value at the end of 5 years by the constant percentage method.

FINAL YEAR B.Tech Civil Semester VII
TRANSPORTATION ENGINEERING – I

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Total credit	Scheme	Theory (Marks)		Practical (Marks)	
						Max	Min for Passing	Max	Min for Passing
Transportation Engineering – I **(PCC-CV704)**	3	-	2	4	ISE	--	--	25	10
					CIE	30	12	--	--
					ESE	70	28	25	10

ISE – In Semester Evaluation CIE – Continuous Internal Evaluation ESE – End Semester Evaluation

Course Objectives:
1. To Study of the various principles of highway planning, design of flexible and rigid pavements, traffic engineering, traffic safety analysis
2. To familiarizing the students with desirable properties and testing procedures of highway construction materials as per BIS and Indian Roads Congress (IRC) standards.
3. To know about tunneling methods in various types of soils.

Course Outcomes: After successful completion of this course students will be able to
1. Carry out surveys involved in planning and highway alignment
2. Design the geometric elements of highways and expressways
3. Carry out traffic studies and implement traffic regulation and control measures and intersection design
4. Characterize pavement materials and design flexible and rigid pavements as per IRC

SECTION I

Unit 1: Introduction toHighway Engineering: (06)

1.1 Modes of transportations, their importance and limitations, the importance of highway transportation. Highway Development and Planning: Principles of Highway planning.
1.2 Road development in India, NHAI, NHDP, PMGSY, MSRDC. Classification of roads, road network patterns, Planning Surveys.
1.3 Terrain classification, design speed, vehicular characteristics, highway cross-section elements.
1.4   Sight distance: introduction to sight distance, reaction time, analysis of safe sight distance, analysis of overtaking sight distance, intersection sight distance.

Unit 2: Highway Geometric Design: (06)
2.1 Design of horizontal alignment: horizontal curves, design of super elevation and its provision, radius at horizontal curves, widening of pavements at horizontal curves, analysis of transition curves.
2.2 Design of vertical alignment: different types of gradients, grade compensation on curves, analysis of vertical curves, summit curves, valley curves.
2.3 Intersection: at grade and grade separated intersections, speed change lanes, Canalization Design of rotary intersection and mini roundabout.

Unit 3: Pavement Materials & Design: (06)

3.1 Pavement materials- Stone aggregates: desirable properties, tests, requirements of aggregates for different types of pavements. Bituminous materials: types, tests on bitumen, desirable properties, selection of grade of bitumen. Bituminous mix design: principle, methods, modified binders.

3.2 Design of pavements-Types of pavements, functions of pavement components, pavement design factors, design wheel load, equivalent single wheel load, repetition of loads, equivalent wheel load factors, strength characteristics of pavement materials, climatic variation; design steps of flexible highway pavement as per IRC 37-2001 and problems based on CBR method, Design of rigid pavement as per IRC 58-2002, Stresses in rigid highway pavements,

3.3 Joints in rigid pavements: transverse joints, longitudinal joints, fillers and sealers.

SECTION II

Unit 4: Highway Construction, Maintenance & Rehabilitation   (06)

4.1 Highway construction- construction of different Types of roads: water bound macadam, BBM, SDBC, DLC & PQC , use of geo-textiles and geo-grids.

4.2 Highway maintenance & rehabilitation- Pavement failures: flexible pavement failures, rigid pavement failures, maintenance of different types of pavements: assessment and need for maintenance, pavement management system, evaluation of pavements: structural evaluation of pavements, functional evaluation of pavements, strengthening of existing pavements: object of strengthening, types of overlays, design of different types overlays.

Unit 5: Traffic Engineering & Highway Drainage   (06)

5.1 Traffic Engineering: Fundamentals of traffic flow, Road User and Vehicular characteristics. Traffic Studies: Volume studies, speed studies, parking studies, origin-destination studies and accident studies.

5.2 Traffic management and Safety: Traffic control devices, channelization, traffic signal, junctions, intelligent transportation system, Design of Rotary Intersection and traffic Signal.

5.3 Highway drainage- Necessity, surface draining and sub drainage

Unit 6: Tunnel Engineering   (06)

6.1 Tunnel Engineering: Introduction to tunneling, size and shape of tunnel and suitability

6.2 Tunneling in hard rock, and soft material, shield method, safety measures,

6.3 Ventilation, lighting and drainage of tunneling.

Term work: At least two assignments on each unit including design problems
List of experiments
• Aggregate Impact Value
• Los Angles Abrasion Test
• Crushing test of aggregate
• Bitumen Penetration
• Softening Point
• Flash Point and Fire Point Test
• Ductility test
• Viscosity of bitumen
• Stripping value

Text Books

1. Highway Engineering By S.K.Khanna and C.E.G.Justo, NemchandBross. Roorkee.
2. Traffic and transport planning, By L.R.Kadiyali, Khanna publisher, New Delhi.
3. Principles and practice of highway engineering, by L R Kadiyali, N B Lal Khanna Publications, 2005
4. Principles Of Transportation Engineering, Partha Chakroborty, PHI Learning, 1st edition
5. Principles of Highway Engineering and Traffic Analysis, 4th Edition, Fred L. Mannering, Scott S. Washburn, Walter P. Kilareski, John Wiley
6. Harbour, Dock and Tunnel engineering by R. Shrinivassan, Charotar Publishing House.

Reference Books

1. Transportation Engineering – An Introduction, by Khistry, C.J, PHI Publication.
2. An Introduction to Transportation Engineering and Planning, by Morlok, E.R., McGraw Hill,NY,1970
3. Introduction to transportation Engineering, by Hay W.W., John Wiley & Sons, NY, 1988.
4. Fundamentals of transportation Engineering, by Papacostas C.S., Prentice Hall of India, 1987.
5. IRC-37-2001 - Guidelines for the Design of Flexible Pavements for Highways
6. IRC-058-1988 - Guidelines for the Design of Plain Jointed Rigid Pavements for Highways
7. IS 1201 to 1220 Methods for testing tar and bituminous materials.
8. IS 1201 to 1220 Methods for testing tar and bituminous materials
9. IS 2386 : Part1to 5 : 1963 Methods of Test for Aggregates

Guidelines Regarding Question Paper Setting:

1. Q. No. 4 and Q. No. 8 are compulsory and it should be based on all units of respective sections.
2. Attempt any two questions from Q. No. 1, 2, 3 and any two questions from Q. No. 5, 6, 7.

End Semester Examination Paper Pattern

Question No.	Based on Unit No.	Marks
1.	1	10
2.	2	10
3.	3	10
4.	1,2 & 3 (Compulsory)	15
5.	4	10
6.	5	10
7.	6	10
8.	4,5 & 6 (Compulsory)	15

ASSIGNMENT QUESTIONS

1. Define objects of Highway Planning and explain empirical methods of estimation of total unit cost of highway transportation.

14

2. What are cross sectional elements of Highway? Derive the formula for overtaking sight distance and safe sight distance

3. What are geometric design elements to be considered for a rural highway, explain with cross of road and a sketch.

4. Write a note on PIEV theory

5. Evaluate formula for SSD

6. Define stopping sight distance and explain factors within which a vehicle can stop depends.

7. Write brief factors controlling alignment

8. Write down design steps of super elevation

9. Explain various reason of widening of pavement to required on horizontal curve

10. What is super elevation? Explain with neat sketch how a vehicle negotiating horizontal curve is prevented from skidding or overtopping.

11. How terrains are classified and write a note on factors affecting controlling alignment of hilly roads.

12. Describe the wheel load stress and temperature stress analysis by Westerguaards methods for rigid pavements. Explain factors affecting design of flexible pavement

13. What are the types of road pavement? Explain components of rigid pavement

14. Explain the factors which affect design of rigid pavement.

15. With neat sketch explain functions of different type of concrete pavement joints.

16. What are the materials used for construction of highway?

17. Explain necessity of providing highway drainage. Write short note on surface and subsurface drainage

18. Write short note on traffic control devices

19. Explain parameters of traffic

20. What are the types of traffic signals?

21. Explain importance of traffic signals and road markings.

22. What are the methods of tunneling in hard rock?

23. Explain how to provide Ventilation, lighting and drainage in pilot tunnel

24. Write short note on TBM

25. What is meant by tunnel lining?

26. Describe the methodology of transferring of center line through shaft in alignment of a tunnel.

27. Factors to be considered in designing of breakwater and tetrapod.

28. Explain how alignment of tunnel is transferred from ground to actual tunnel construction site.

ELECTIVE-I

Sr.No.	Name of Subjects
1.	Advanced Traffic Engineering
2.	Open Channel Hydraulics
3.	Remote Sensing and GIS Application in Civil Engineering
4.	Solid Waste Management
5.	Optimization Techniques
6.	Town Planning

FINAL YEAR B.Tech Civil Semester VII
PROFESSIONAL ELECTIVE I : SOLID WASTE MANAGEMENT (PCE-CV705)

Course	Teaching Scheme				Evaluation Scheme				
						Theory (Marks)		Practical (Marks)	
	L	T	P	Credit	Scheme	Max.	Min. for passing	Max.	Min. for passing
EL - I (PCE-CV705)	03	01	--	04	ISE	--	--	25	10
					CIE	30	12	--	--
					ESE	70	28	25	10

ISE: In Semester Evaluation   CIE: Continuous Internal Evaluation   ESE: End Semester Examination

Course Objectives:

1. To get on broader understandings on various aspects of solid waste management (starting from its generation to processing with options for reuse and recycle, transport, and disposal)
2. To study different processing technologies of municipal solid waste.
3. To know the various aspects including recovery of biological conversion products from solid waste to compost and biogas, incineration and energy recovery
4. To know various disposal methods of solid waste.

Course Outcomes: After successful completion of this course students will be able to,

1. Learn basic concepts of solid waste management, beginning from source generation to waste disposal in a system of municipality organizational structure.
2. To acquire a fair amount of knowledge on waste characterization and its management practices
3. Develop understanding on various technological applications for processing of waste and their disposals in various ways.
4. Acquire knowledge on waste to energy productions in the perspectives of sustainable development.
5. Apply basic concepts in hazardous waste management and integrated waste management for urban areas.

SECTION I

Unit 1: Introduction to Solid Waste Management: (06)

1.1 Introduction , Overview: problems and issues of solid waste management - Need for solid waste management
1.2 Indian scenario, progress in MSW (municipal solid waste) management in India , Rules & regulation regarding MSWM ,
1.3 Functional elements of Solid Waste Management.
1.4 Classification of solid wastes (source and type based)
1.5 Hazardous waste:-Definition, sources, hazardous characteristics, management, treatment and disposal
1.6 Biomedical waste:-Definition, sources, classification, collection, segregation- Color coding, treatment and disposal

Unit 2: Solid Waste Generation, Handling, Storage and Processing   (06)

2.1 Waste generation, Solid waste generation rates and expression of unit generation**,** Methods used to estimate Waste Quantities, factors affecting generation of solid wastes.
2.2 Composition, sampling and characteristics of waste (physical and chemical),
2.3 Solid Waste Handling, Storage and Processing at the Source - Introduction, On-site handling, storage and segregation of wastes at source, On-site processing.

2.4 Collection of municipal solid waste - Methods of collection, Types of Collection system, Analysis of Collection System, Collection routes.

Unit 3: Transfer and Transport of Solid Waste and Waste Processing: (06)

3.1 Transfer station- Introduction, Need, Types, Criteria for Transfer station location, Factors to be considered in planning and design of Transfer Station.

3.2 Transport - Common Waste Collection Vehicles, factors considered in selecting collection vehicles

3.3 Waste Processing – Objectives, Unit operations for component separation, material separation and processing technologies.

3.4 Material Recovery Facilities (MRF) & types, Commonly Recycled Materials and Processes.

SECTION II

Unit 4: Land Disposal of Solid Waste   (06)

4.1 Sanitary landfilling - Introduction, Impacts from Dumps , Essential components   of sanitary landfilling,

4.2 Methods of landfilling, site selection criteria for landfilling ,

4.3 Planning & designing of sanitary landfilling , Sanitary Landfilling Construction

4.4 Leachate :- Drainage, Collection and Removal , Leachate Management & treatment, Landfill gas and its control measures

4.5 Maintenance and precautions of landfilling, Closure & end-use.

Unit 5: Biological Treatment of Solid waste – Composting   (06)

5.1 Composting- Definition and phases of composting , Theory of composting

5.2 Types of composting, Methods of composting

5.3 Factors affecting composting process, Compost quality

5.4 Vermi Composting, Mechanical composting plant, Recovery of Bio – gas energy.

Unit 6: Incineration   (06)

6.1 Introduction, Objectives of Incineration, Need of incineration

6.2 Incineration process, Types of incinerators,

6.3 Site selection criteria, factors affecting incineration,

6.4 Waste to energy, Pyrolysis and its by-products

6.5 Air pollution and its control.

Term work:

A. At least one assignment on each unit.

B. Visit to any Municipal Solid Waste Processing Plant/Unit & its report.

Text Books

1. Integrated Solid Waste Management: Engineering principles and management issues by George Tchobanoglous, Hilary Theisen, Samuel A Vigil, , M/c Graw hill Education . Indian edition.

2. Environmental Engineering by Howard S Peavy, Donald R Rowe and George Tchobanoglous , Tata Mcgraw Hill Publishing Co ltd.,

Reference Books:

1. Municipal Solid Wastes (Management and Handling) Rules, 2000.Ministry of Environment and Forests Notification, New Delhi, the 25th September, 2000. Amendment – 1357(E) – 08-04-2016
2.Municipal Solid waste management manual, Part II published under Swachh Bharat Mission, Central Public Health And Environmental Engineering Organization (CPHEEO), 2016, Ministry of Urban Development, Government of India.
3.Handbook of Solid waste management, second edition, George Tchobanoglous, Frank Kreith, published by M/c Graw hill Education, 2002, ISBN-13 9780071356237 ISBN -10 0071356231

Guidelines Regarding Question Paper Setting:
1.Q. No. 4 and Q. No. 8 are compulsory and it should be based on all units of respective sections.
2.Attempt any two questions from Q. No. 1, 2, 3 and any two questions from Q. No. 5, 6, 7.

End Semester Examination Paper Pattern

Question No.	Based on Unit No.	Marks
1.	1	10
2.	2	10
3.	3	10
4.	1,2 & 3 (Compulsory)	15
5.	4	10
6.	5	10
7.	6	10
8.	4,5 & 6 (Compulsory)	15

Assignment Questions:

SOURCES AND TYPES OF MUNICIPAL SOLID WASTE

1. Define solid Waste Management.

2. Define the term Refuse.

3. List out the various Solid Waste produced by community.

4. Define the term solid waste

5. State the per capita solid Waste generation in India.

6. Mention any two public awareness programme with regard to SWM.

7. Define special Waste. Draw the flowchart for Material flow and waste generation.

8. Write any four factors that affect the generation rates of the Solid waste.

9. What are the early disposal pracher of solid waste.

10. List the functional element of solid waste management system.

11. List out the various sources of Solid waste.

12. Define the term Rubbish.

13. Write short notes on physical composition of municipal solid waste.

14. Write short notes on chemical composition of municipal solid waste.

15. How will you determine the moisture content of the solid waste?

16. Write short notes on physical characteristics of MSW.

17. What are the chemical characteristics MSW?

18. Write any four health effects due to improper disposal.

19. Write any four ill effect of improper disposal of solid waste into environment.

20. Write any two role of NGO in creating awareness.

21. Define sampling of solid waste.

22. What are hazardous waste?

23. What is Bio Medical Waste?

24. What is E-Waste?

25. What is Leachate?

26. Define Vermi Composting.

27. What is demolition and construction waste?

28. Write any two advantages of waste characteristics.

SHIVAJI UNIVERSITY, KOLHAPUR
FINAL YEAR B.Tech Civil Semester VII
Legal Aspects in Civil Engineering

Course	Teaching Scheme					Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical (Marks)		
						Max.	Min. for Passing	Max.	Min. for Passing	
LACE (HM-CV706)	02	--	02	03	ISE	---	---	25	10	
					CIE	---	---	---	---	
					ESE	---	---	---	---	

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESE: End Semester Examination

Course Objectives:

1. To aware the students about Indian Contract and Arbitration act.
2. To provide knowledge about contract administration.
3. To provide knowledge about safety acts.

Course Outcome: After successful completion of this course students will be able to:

1. Students will learn Indian contract act, Arbitration act and contract administration.
2. Students will understand the labour laws.
3. Students will be understand safety engineering and relevant acts.

Unit I Contract and Tenders: (07)

Contracts, Types of Contracts, Tender document- invitation of tenders. Tender notice, tender documents, Submission. Scrutiny and acceptance two envelop method. Award of jobs. Various conditions to contracts. Rights and responsibilities of parties of contracts. E- Tendering, Introduction to Non-Conventional Contracts

Unit II Contract administration: (07)

Essentials of legally void and avoidable contracts, contract for engineer and architecture services, contract between owner and contractor. Introduction to RERA

Unit III Arbitration: (07)

Introduction to Indian Arbitration Act, Arbitration Agreement, Power and Duties of Arbitration, Different types of arbitration, Qualification of arbitrator.

Unit IV (07)

Workmen's Compensation Act, Safety and health standards, Employer's liability act, Employer's Insurance act.

Term Work:

1. One assignment per unit.
2. Visit to one Public Bodies & prepare a report regarding tendering process over there.
3. In house tendering process which includes demonstration & preparation of reports in batches

Text Books:

1. Indian arbitration Act by B. S. Patil
2. Contract-I by R. K. Bangia
3. Contract-II by R. K. Bangia
4. Estimation, Costing, Spectification, and valuation in Civil Engineering by M. Chakraborti.
5. Estimation & Costing in Civil Engineering by B.N.Dutta, UBS Publishers & Distributore Pvt.Ltd.
6. Civil Engineering Contracts & Estimates by B. S. Patil
7. Legal Aspects of building and Engineering Contracts by B. S. Patil
8. Indian contract Act Avatar singh
9. Indian Contract Act.

ASSIGNMENT QUESTION

1. What is Contract?

2. What is Tender?

3. Explain Tender Notice and tender document.

4. Write note on-

     -Earnest Money Deposit

     -Security Deposit

5. W hat is the procedure for submission of tender

6. Explain types of contract

7. What are the essentials for legally void and voidable contract?

8. Write on RERA

9. What is Arbitration?

10. What are the powers and duties of arbitrator?

11. Explain different types of Arbitrator

12. What are the essential qualifications required for Arbitrator

13. Write note on-

     1. Workmen's Compensation Act

     2. Employer's Liability Act

3. Employer's Insurance act

14. Write conditions when lowest tender is rejected

15. Explain the procedure of submitting filled render documents.

16. Write a note on Indian Arbitration Act

17. List the points to be included while drafting tender notice

18. Explain two envelop system of submission of tender.

19. State the conditions under which all tenders are rejected.

20. Write a note on Safety and health Standards.

FINAL YEAR B.Tech Civil Semester VII
FIELD TRAINING

Course	Teaching Scheme					Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical (Marks)		
						Max.	Min. for Passing	Max.	Min. for Passing	
Field Training (SI-CV707)	--	--	--	--	ISE	---	---	25	10	
					CIE	---	---	---	---	
					ESE	---	---	---	---	

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESE: End Semester Examination

Based on the field training done by the students in T.Y. B.Tech during the winter and summer vacation, as mentioned in the syllabus. The oral is to be conducted preferably in presence of expert from field and final term work marks are to be given based on performance in oral exam and the project report in the field book.

FINAL YEAR B.Tech Civil Semester VII
PROJECT PHASE - I

Course	Teaching Scheme					Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical (Marks)		
						Max.	Min. for Passing	Max.	Min. for Passing	
PP-I (PW-CV708)	--	--	02	01	ISE	---	---	50	20	
					CIE	---	---	---	---	
					ESE	---	---	---	---	

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESE: End Semester Examination

The project work will be a design project, experimental project, field surveying or computer oriented on any of the topics of civil engineering interest. It will allot as a group project consisting of a minimum THREE and maximum FIVE number of students, depending upon the depth of project depth work. The student is required to do literature survey, formulate the problem and form a methodology of arriving at the solution of the problem.

Probable Activities of Project Phase – I

01. Submission of project topic with names of group member
02. Finalization of topic and allotment of guide by department through DRC
03. Submission of synopsis duly signed by students and guide
04. Presentation of synopsis in front of DRC
05. Introduction and literature review presentation
06. Methodology and future work presentation

The term work assessment of the project will be done continuously throughout the semester by a DRC committee consisting of 3-4 faculty members from the department along with Project Guide. The students will present their project work before the committee. The complete project report is not expected at the end this semester. However, ten pages typed report based on the work done will have to be submitted by the students to the assessing committee. The project guides will award the marks to the individual students depending on the group average awarded by the committee.

One Project Guide shall be allotted Maximum TWO groups for guidance.

For work load calculation minimum load is 1 Hr./week, for one group of FOUR to FIVE students. (As per AICTE Guide Lines).

Department of Civil Engineering

RUBRIC for Project-Work Assessment

	UNACEPTABLE	DEVELOPING	GOOD	EXCELLENT
Selection of Project	☐ Neither Sponsored nor well explored. ☐ Very Low Utility. ☐ Low Scope for Skills demonstration.	☐ Not Sponsored but some exploration. ☐ Low Utility. ☐ Some Scope for Skills demonstration.	☐ Partially Sponsored and sufficiently explored. ☐ Acceptable Utility. ☐ Adequate Scope for Skills demonstration.	☐ Fully Sponsored and well explored. ☐ High Utility. ☐ High Scope for Skills demonstration.
Clarity of Objectives.	☐ Little efforts put in Identification & Formulation. ☐ Objectives Need major reworking. ☐ Unclear Presentation of Intentions.	☐ Some efforts put in Identification & Formulation. ☐ Objectives Need Some reworking. ☐ Needs some clarity in Presentation of Intentions.	☐ Sufficient efforts put in Identification & Formulation. ☐ Acceptable Objectives. ☐ Acceptable clarity in Presentation of Intentions.	☐ Thorough efforts put in Identification & Formulation. ☐ Very Clear Objectives. ☐ High Clarity in Presentation of Intentions.
Problem Solving	☐ Little use of Engg. Knowledge. ☐ No Engineering tools used. ☐ Little use of Design Skills	☐ Some use of Engg. Knowledge. ☐ Some Engineering tools used. ☐ Some Design Skills used.	☐ Sufficient use of Engg. Knowledge. ☐ Acceptable use of Engineering tools. ☐ Acceptable use of Design Skills.	☐ Excellent use of Engg. Knowledge. ☐ Sufficient use of Engineering tools. ☐ Sufficient use of Design Skills
Team-Work.	☐ Unclear work distribution. ☐ Very Low Team Communication. ☐ Team attitudes are Negative.	☐ Some form of work distribution. ☐ Low Team Communication. ☐ Team Attitudes need improvement.	☐ Clear work distribution. ☐ Acceptable Team Communication. ☐ Team Attitudes are Acceptable.	☐ Very Clear work distribution. ☐ Good team Communication. ☐ Team Attitudes are very positive.
Demonstration and Report.	☐ Un-organized demonstration. ☐ Very Low Attainment of objectives. ☐ Report is imprecise, incomplete & inconclusive.	☐ Some order in Demonstration. ☐ Low Attainment of Objectives. ☐ Report is somewhat imprecise, incomplete & inconclusive.	☐ Acceptable order in Demonstration. ☐ Adequate Attainment of Objectives. ☐ Report is precise, complete & conclusive.	☐ Very Clear order in Demonstration. ☐ Full attainment of Objectives. ☐ Report is very precise, complete & conclusive.

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Student Self Assessment RUBRIC for Term-Work Assessment

CRITERIA	UNACEPTABLE	DEVELOPING	GOOD	EXCELLENT
Lecture Attendance & Involvement.	☐ My Attendance is Very Low. ☐ I am Inattentive in class ☐ I Never involve in the Q/A during Lecture	☐ My Attendance is Low ☐ I am Sometimes Attentive in class ☐ I Sometimes involve in Q/A during Lecture	☐ My Attendance is Acceptable. ☐ I am Mostly Attentive in class ☐ I Generally involve in Q/A during the Lecture	☐ I have full Attendance ☐ I am Always Attentive in class ☐ I Eagerly involve in Q/A during the Lecture
Lab work Attendance & Involvement.	☐ My Attendance is Very Low ☐ I don‟t Come prepared. ☐ I Avoid involvement in Lab work.	☐ My Attendance is Low ☐ Sometimes I come prepared. ☐ I am Sometimes involved in Lab work.	☐ My Attendance is Acceptable. ☐ Mostly I am prepared. ☐ I am Generally involved in Lab work.	☐ I have Full Attendance. ☐ I come Always prepared. ☐ I Eagerly involve in all Lab work.
Lab work **report** writing , Assignments & Submissions	☐ None of my submissions are on Time. ☐ My Submission lack readability & clarity.	☐ Few of my submissions are on time ☐ Some of my submissions are readable & clear.	☐ Most of my submissions are on time. ☐ Most of my submissions are readable & clear.	☐ All of my submissions are on time. ☐ All of my submissions are readable & clear.
Efforts made in Class **Tests**.	☐ I Appear Unprepared. ☐ My Average Score is Very Low	☐ My Preparation & presentation is not sufficient. ☐ My Average Score is Low	☐ My preparation & presentation is Adequate ☐ My Average Score is Acceptable	☐ My preparation & presentation is excellent ☐ My Average Score is High
Oral Communication to Questions on Subject/ course contents.	☐ I become Anxious & Uncomfortable. ☐ I Make No effort to understand the Questions ☐ My Communication in not clear.	☐ Sometimes I am Relaxed & Comfortable. ☐ I Make Some effort to understand the Questions. ☐ My Communication is barely clear.	☐ Mostly I am Relaxed & Comfortable. ☐ I Make effort to understand the Questions. ☐ My Communication is mostly clear	☐ I am Always Relaxed & Comfortable. ☐ I Understand the Questions Effortlessly. ☐ My Communication is always very clear.

Dr. J.J. Magdum College of Engineering, Jaysingpur.
Department of Civil Engineering
Department Staff

Academic Year – 2022-23

	Name of the Faculty	Designation	Personal Mobile No.	Mail Id
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03	Prof. K. G. Ghodake	**Asst.Professor**	9422343536	kiran.ghodake@jjmcoe.ac.in
04	Prof. A. S. Sajane	**Asst.Professor**	9922994443	amitkumar.sajane@jjmcoe.ac.in
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12				
13				
14				
15				
16				

Dr. J.J. Magdum College of Engineering, Jaysingpur.
Department of Civil Engineering
Department Staff

Sr. No	Name of the Staff	Designation	Contact Numbers
01	Mr. Patil A.V.	**Sr. Tech.Asst.**	8390243660
02	Mr. Kolap G.G.	**Tech.Asst.**	9890624396
03			
04			
05			
06			

ACTIVITY RECORD
(COUNSELING, CO/EXTRA CURRICULAR, LEAVE)

Counseling Staff Name:

Date	Topic	Suggestion

Co/Extra Curricular Activities:

Date	Activity Name	Participation level	Outcome

Leave Record:

Sr. No.	From	To	Reason	Permitting Staff	Remark

Notes