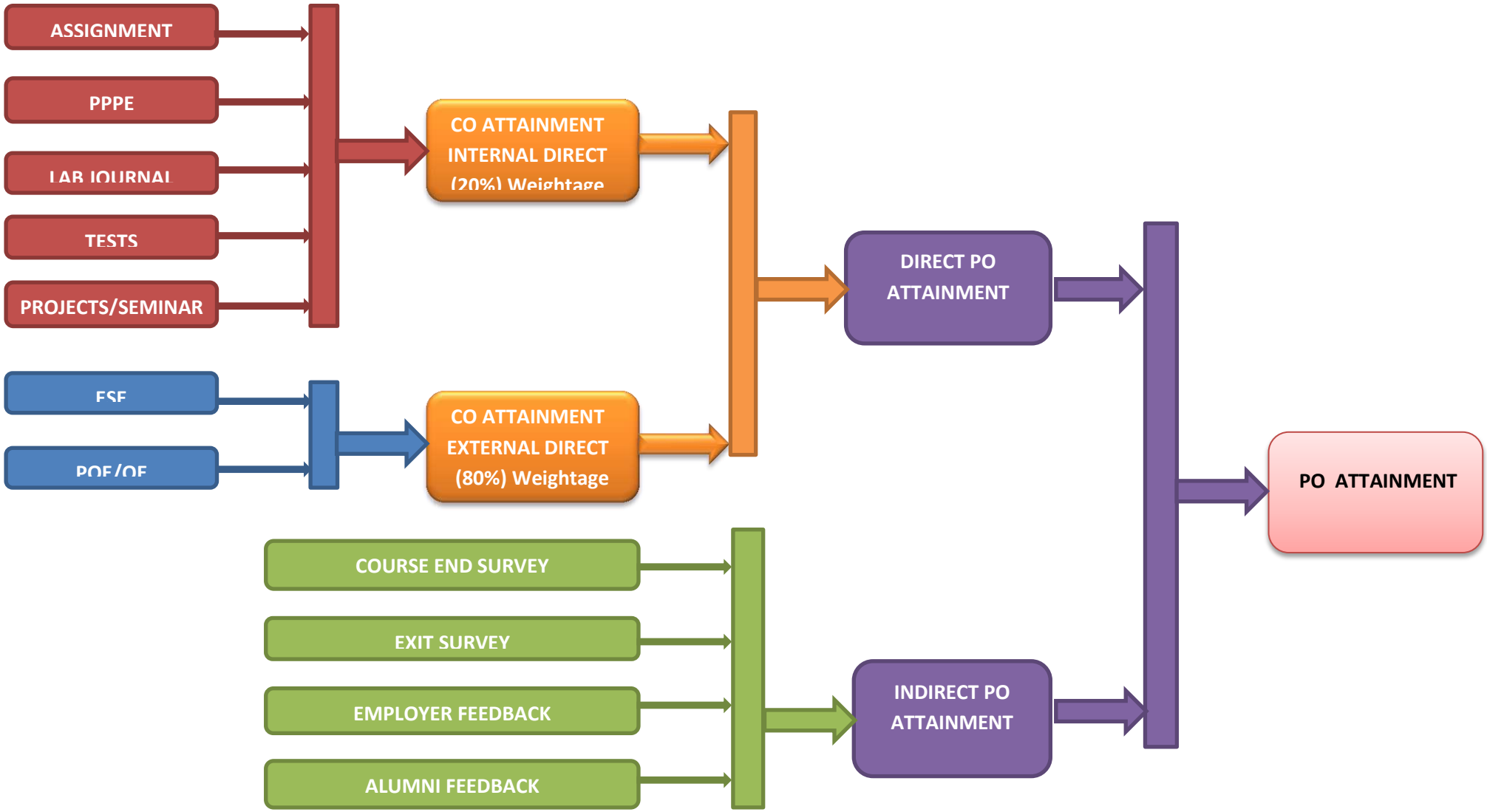
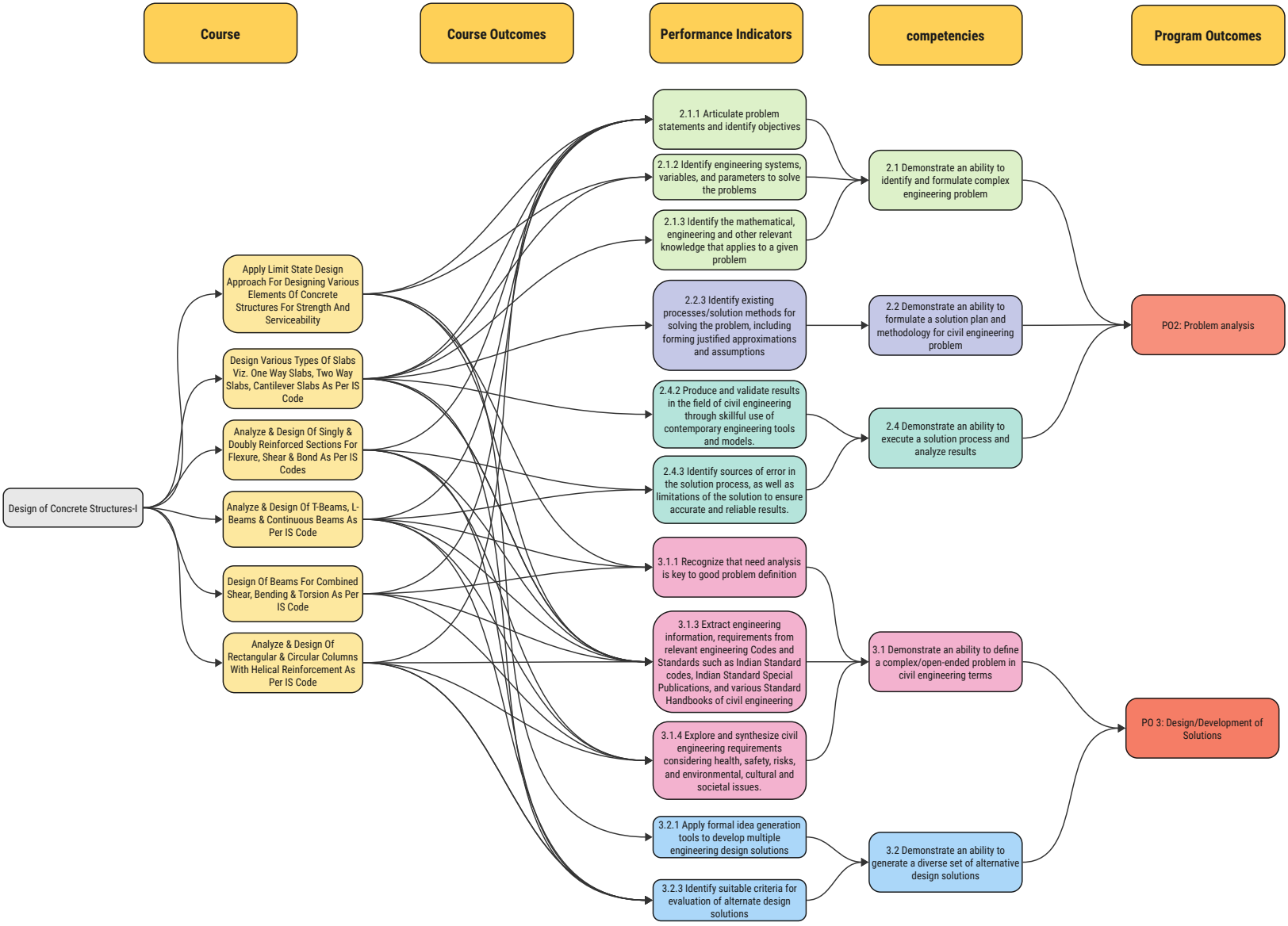
Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

2.6.2 Attainment of Program Outcomes and Course Outcomes

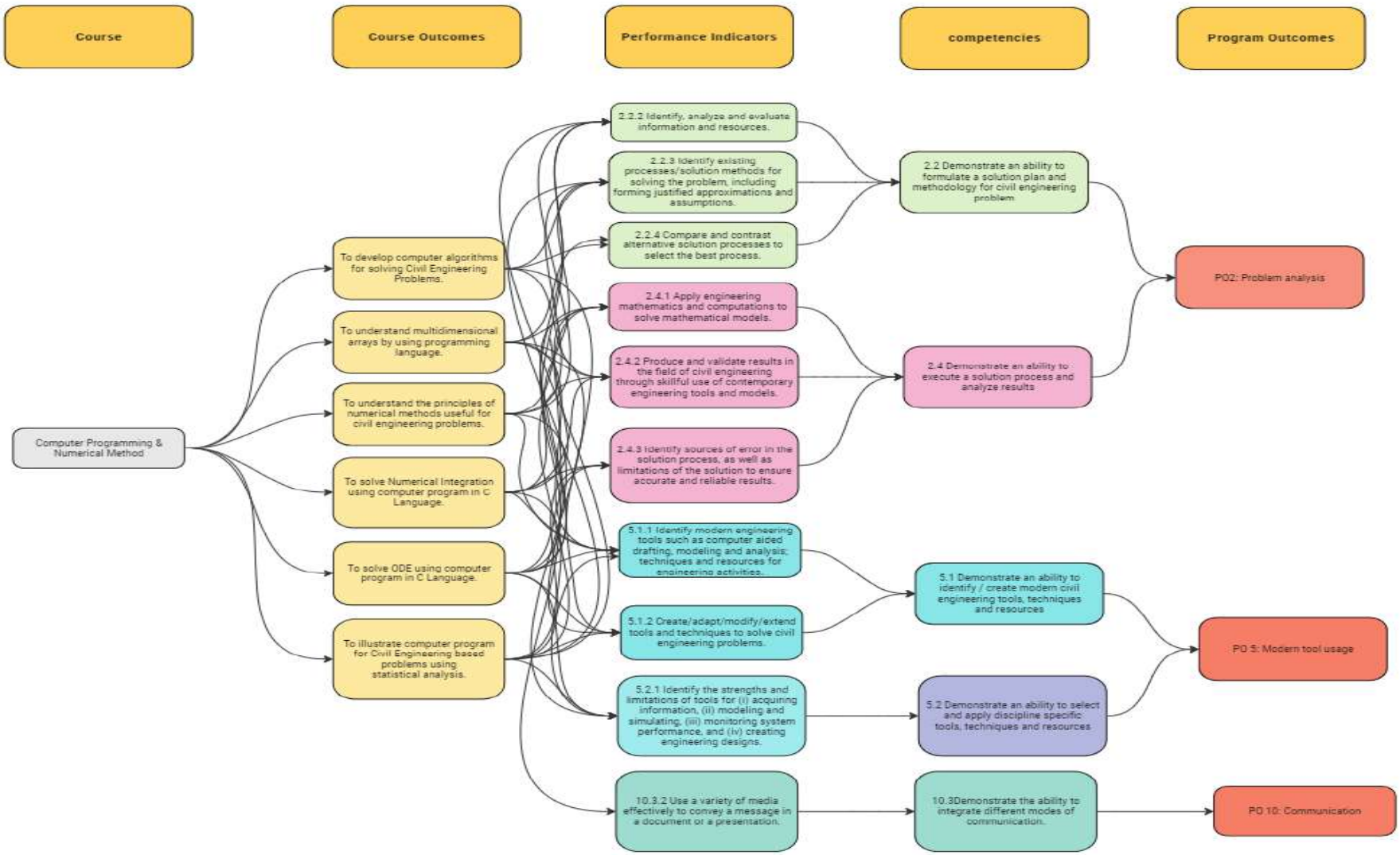
COURSE AND PROGRAM OUTCOME ASSESSMENT PROCESS



TOOL-CO-PO – PSO LINKING (THEORY)


Course
Course Outcomes
Performance Indicators
competencies
Program Outcomes
Design of Concrete Structures-I
Apply Limit State Design Approach For Designing Various Elements Of Concrete Structures For Strength And Serviceability
Design Various Types Of Slabs Viz. One Way Slabs, Two Way Slabs, Cantilever Slabs As Per IS Code
Analyze & Design Of Singly & Doubly Reinforced Sections For Flexure, Shear & Bond As Per IS Codes
Analyze & Design Of T-Beams, L-Beams & Continuous Beams As Per IS Code
Design Of Beams For Combined Shear, Bending & Torsion As Per IS Code
Analyze & Design Of Rectangular & Circular Columns With Helical Reinforcement As Per IS Code
2.1.1 Articulate problem statements and identify objectives
2.1.2 Identify engineering systems, variables, and parameters to solve the problems
2.1.3 Identify the mathematical, engineering and other relevant knowledge that applies to a given problem
2.2.3 Identify existing processes/solution methods for solving the problem, including forming justified approximations and assumptions
2.4.2 Produce and validate results in the field of civil engineering through skillful use of contemporary engineering tools and models.
2.4.3 Identify sources of error in the solution process, as well as limitations of the solution to ensure accurate and reliable results.
3.1.1 Recognize that need analysis is key to good problem definition
3.1.3 Extract engineering information, requirements from relevant engineering Codes and Standards such as Indian Standard codes, Indian Standard Special Publications, and various Standard Handbooks of civil engineering
3.1.4 Explore and synthesize civil engineering requirements considering health, safety, risks, and environmental, cultural and societal issues.
3.2.1 Apply formal idea generation tools to develop multiple engineering design solutions
3.2.3 Identify suitable criteria for evaluation of alternate design solutions
2.1 Demonstrate an ability to identify and formulate complex engineering problem
2.2 Demonstrate an ability to formulate a solution plan and methodology for civil engineering problem
2.4 Demonstrate an ability to execute a solution process and analyze results
3.1 Demonstrate an ability to define a complex/open-ended problem in civil engineering terms
3.2 Demonstrate an ability to generate a diverse set of alternative design solutions
PO2: Problem analysis
PO 3: Design/Development of Solutions

TOOL-CO-PO – PSO LINKING
(LAB PRACTICALS)


Course
Course Outcomes
Performance Indicators
competencies
Program Outcomes
Computer Programming & Numerical Method
To develop computer algorithms for solving Civil Engineering Problems.
To understand multidimensional arrays by using programming language.
To understand the principles of numerical methods useful for civil engineering problems.
To solve Numerical Integration using computer program in C Language.
To solve ODE using computer program in C Language.
To illustrate computer program for Civil Engineering based problems using statistical analysis.
2.2.2 Identify, analyze and evaluate information and resources.
2.2.3 Identify existing processes/solution methods for solving the problem, including forming justified approximations and assumptions.
2.2.4 Compare and contrast alternative solution processes to select the best process.
2.4.1 Apply engineering mathematics and computations to solve mathematical models.
2.4.2 Produce and validate results in the field of civil engineering through skillful use of contemporary engineering tools and models.
2.4.3 Identify sources of error in the solution process, as well as limitations of the solution to ensure accurate and reliable results.
5.1.1 Identify modern engineering tools such as computer aided drafting, modeling and analysis; techniques and resources for engineering activities.
5.1.2 Create/adapt/modify/extend tools and techniques to solve civil engineering problems.
5.2.1 Identify the strengths and limitations of tools for (i) acquiring information, (ii) modeling and simulating, (iii) monitoring system performance, and (iv) creating engineering designs.
10.3.2 Use a variety of media effectively to convey a message in a document or a presentation.
2.2 Demonstrate an ability to formulate a solution plan and methodology for civil engineering problem
2.4 Demonstrate an ability to execute a solution process and analyze results
5.1 Demonstrate an ability to identify / create modern civil engineering tools, techniques and resources
5.2 Demonstrate an ability to select and apply discipline specific tools, techniques and resources
10.3Demonstrate the ability to integrate different modes of communication.
PO2: Problem analysis
PO 5: Modern tool usage
PO 10: Communication

Course Outcomes and Program Outcomes Attainment Sheets Generated by Rwork (LMS)

COURSE CO INFORMATION

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
COURSE CO INFORMATION REPORT
ACADEMIC YEAR: 2023-24
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
SEMESTER: SEMESTER I
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)

Sr. No.	CO Code	CO Statements	Bloom's Level
1	CE55C.1	APPLY LIMIT STATE DESIGN APPROACH FOR DESIGNING VARIOUS ELEMENTS OF CONCRETE STRUCTURES FOR STRENGTH AND SERVICEABILITY	BL3 APPLY
2	CE55C.2	DESIGN VARIOUS TYPES OF SLABS VIZ. ONE WAY SLABS, TWO WAY SLABS, CANTILEVER SLABS AS PER IS CODE	BL3 APPLY
3	CE55C.3	ANALYZE & DESIGN OF SINGLY & DOUBLY REINFORCED SECTIONS FOR FLEXURE, SHEAR & BOND AS PER IS CODES	BL3 APPLY, BL4 ANALYZE
4	CE55C.4	ANALYZE & DESIGN OF T-BEAMS, L-BEAMS & CONTINUOUS BEAMS AS PER IS CODE	BL3 APPLY, BL4 ANALYZE
5	CE55C.5	DESIGN OF BEAMS FOR COMBINED SHEAR, BENDING & TORSION AS PER IS CODE	BL3 APPLY
6	CE55C.6	ANALYZE & DESIGN OF RECTANGULAR & CIRCULAR COLUMNS WITH HELICAL REINFORCEMENT AS PER IS CODE	BL3 APPLY, BL4 ANALYZE

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
COURSE PO MAPPING INDEX REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
TERM: TERM I
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)

Sr. No.	CO Code	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CE55C.1	APPLY â€˜LIMIT STATEâ€™ DESIGN APPROACH FOR DESIGNING VARIOUS ELEMENTS OF CONCRETE STRUCTURES FOR STRENGTH AND SERVICEABILITY	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA
2	CE55C.2	DESIGN VARIOUS TYPES OF SLABS VIZ. ONE WAY SLABS, TWO WAY SLABS, CANTILEVER SLABS AS PER IS CODE	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA
3	CE55C.3	ANALYZE & DESIGN OF SINGLY & DOUBLY REINFORCED SECTIONS FOR FLEXURE, SHEAR & BOND AS PER IS CODES	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA
4	CE55C.4	ANALYZE & DESIGN OF T-BEAMS, L-BEAMS & CONTINUOUS BEAMS AS PER IS CODE	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA
5	CE55C.5	DESIGN OF BEAMS FOR COMBINED SHEAR, BENDING & TORSION AS PER IS CODE	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA
6	CE55C.6	ANALYZE & DESIGN OF RECTANGULAR & CIRCULAR COLUMNS WITH HELICAL REINFORCEMENT AS PER IS CODE	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA

Course PO Matrix

Sr. No.	Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CE55C	DESIGN OF CONCRETE STRUCTURES I	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
CO TARGET REPORT
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
CLASS NAME: THIRD YEAR
Term: TERM I
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)

Internal Tool Information

Sr. No	Tool Name	CE55C.1	CE55C.2	CE55C.3	CE55C.4	CE55C.5	CE55C.6
1	ISE-1	2	2	NA	NA	NA	NA
2	OBT-1	3	3	NA	NA	NA	NA
3	THT-1	NA	3	NA	NA	NA	NA
4	ISE-2	NA	NA	2	2	NA	NA
5	OBT-2	NA	NA	3	3	NA	NA
6	ISE-3	NA	NA	NA	NA	2	2
7	OBT-3	NA	NA	NA	NA	3	3
8	UT-1	NA	3	NA	NA	NA	NA
9	UT-2	NA	NA	NA	3	NA	NA
10	UT-3	NA	NA	NA	NA	3	2
11	ASSIGNMENT	3	3	3	3	3	3
12	PPPE	3	3	3	3	3	3
Average CO Target		2.75	2.83	2.75	2.8	2.8	2.6

Internal Tool Weightage (%) 20

External Tool Information

Sr. No.	Tool Name	CE55C.1	CE55C.2	CE55C.3	CE55C.4	CE55C.5	CE55C.6
1	ESE	2	2	2	2	2	2
Average CO Target		2	2	2	2	2	2

External Tool weightage (%) 80

Overall Course CO Target

Sr. No.	Tool Type	CE55C.1	CE55C.2	CE55C.3	CE55C.4	CE55C.5	CE55C.6	Overall Target
1	**Internal**	2.75	2.83	2.75	2.8	2.8	2.6	2.76
2	**External**	2	2	2	2	2	2	2
3	**Overall Target**	2.15	2.17	2.15	2.16	2.16	2.12	2.15

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR

COURSE-CO ATTAINMENT

DEPARTMENT: CIVIL ENGINEERING

PROGRAM:UNDER GRADUATE IN CIVIL ENGINEERING

CLASS: THIRD YEAR

DIVISION:A

SEMESTER:SEMESTER I

COURSE : DESIGN OF CONCRETE STRUCTURES I (CE55C)

ACADEMIC YEAR: 2023-24

DESIGN OF CONCRETE STRUCTURES I (CE55C) Co Attainment THIRD YEAR Div.- A for A.Y - 2023-24

Attainment through Board Examination Weightage (%): 80

Sr. No.	Tools	CE55C.1	CE55C.2	CE55C.3	CE55C.4	CE55C.5	CE55C.6
1	ESE	2	2	2	2	2	2
Attainment through Board Exam		2.00	2.00	2.00	2.00	2.00	2.00

Attainment through Internal Assessment Weightage (%): 20

Sr. No.	Tools	CE55C.1	CE55C.2	CE55C.3	CE55C.4	CE55C.5	CE55C.6
1	ISE-1	3	0	NA	NA	NA	NA
2	OBT-1	3	3	NA	NA	NA	NA
3	THT-1	NA	3	NA	NA	NA	NA
4	ISE-2	NA	NA	0	0	NA	NA
5	OBT-2	NA	NA	3	3	NA	NA
6	ISE-3	NA	NA	NA	NA	3	2
7	OBT-3	NA	NA	NA	NA	3	3
8	UT-1	NA	3	NA	NA	NA	NA
9	UT-2	NA	NA	NA	3	NA	NA
10	UT-3	NA	NA	NA	NA	3	NA
11	ASSIGNMENT	3	3	3	3	3	3
12	PPPE	3	3	3	3	3	3
Attainment through Internal Assessment		3.00	2.50	2.25	2.40	3.00	2.75

Overall Course CO Attainment

Sr. No.	Tool Type	CE55C.1	CE55C.2	CE55C.3	CE55C.4	CE55C.5	CE55C.6	Overall Attainment
1	**Attainment through Board Exam**	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2	**Attainment Through Internal Assessment**	3.00	2.50	2.25	2.40	3.00	2.75	2.65
Direct Attainment		2.20	2.10	2.05	2.08	2.20	2.15	2.13

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR

COURSE-CO ATTAINMENT

DEPARTMENT: CIVIL ENGINEERING

PROGRAM:UNDER GRADUATE IN CIVIL ENGINEERING

CLASS: THIRD YEAR

DIVISION:A

SEMESTER:SEMESTER I

COURSE : DESIGN OF CONCRETE STRUCTURES I (CE55C)

ACADEMIC YEAR: 2023-24

DESIGN OF CONCRETE STRUCTURES I (CE55C) Co Attainment THIRD YEAR Div.- A for A.Y - 2023-24

Attainment through Board Examination Weightage (%): 80

Sr. No.	Tools	CE55C.1		CE55C.2		CE55C.3		CE55C.4		CE55C.5		CE55C.6	
		Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment
1	ESE	2	2	2	2	2	2	2	2	2	2	2	2
Target and Attainment of External Assessment		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Attainment through Internal Assessment Weightage (%): 20

Sr. No.	Tools	CE55C.1		CE55C.2		CE55C.3		CE55C.4		CE55C.5		CE55C.6	
		Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment
1	ISE-1	2	3	2	0	NA	NA	NA	NA	NA	NA	NA	NA
2	OBT-1	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA
3	THT-1	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA
4	ISE-2	NA	NA	NA	NA	2	0	2	0	NA	NA	NA	NA
5	OBT-2	NA	NA	NA	NA	3	3	3	3	NA	NA	NA	NA
6	ISE-3	NA	NA	NA	NA	NA	NA	NA	NA	2	3	2	2
7	OBT-3	NA	NA	NA	NA	NA	NA	NA	NA	3	3	3	3
8	UT-1	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA
9	UT-2	NA	NA	NA	NA	NA	NA	3	3	NA	NA	NA	NA
10	UT-3	NA	NA	NA	NA	NA	NA	NA	NA	3	3	2	NA
11	ASSIGNMENT	3	3	3	3	3	3	3	3	3	3	3	3
12	PPPE	3	3	3	3	3	3	3	3	3	3	3	3
Target and Attainment of Internal Assessment		2.75	3.00	2.83	2.50	2.75	2.25	2.80	2.40	2.80	3.00	2.60	2.75

Overall Course CO Attainment

Sr. No.	Tool Type	CE55C.1		CE55C.2		CE55C.3		CE55C.4		CE55C.5		CE55C.6		Overall Attainment	
		Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment	Target	Attainment
1	**Attainment through Board Exam**	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2	**Attainment through Internal Assessment**	2.75	3.00	2.83	2.50	2.75	2.25	2.80	2.40	2.80	3.00	2.60	2.75	2.76	2.65
Co Target and Direct Attainment		2.15	2.20	2.17	2.10	2.15	2.05	2.16	2.08	2.16	2.20	2.12	2.15	2.15	2.13

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL: ESE
TOOL MAX. MARKS: 70

PRN NO.	Name of Student	Obtained Marks
202101053015889	SAYLI VIJAY ASHTUL	43
202201053044293	AISHWARYA ROHIDAS CHAVAN	28
202101053016558	NAMRATA DINKAR CHAVARE	37
202101053016667	SANIKA GAJANAN DESHMUKHE	40
202201053044272	KAJAL SHRAVAN KAMBLE	34
202101053016659	PRIYANKA PRATAP KARANDE	33
202101053016789	RUTUJA MAHESH KAWADE	3
202201053044526	PRIYANKA IRANNA KOLI	50
202101053016839	AISHWARYA PRADIP KUMBHAR	38
202101053016798	DIVYA RAJENDRA LATAKE	34
202101053016661	AAKANKSHA JAGANNATH MANE	43
202101053016617	POOJA DADASAHEB NAGANE	30
202101053016625	SNEHAL NAVNATH RONGE	31
202101053016860	ALVIRA AMIN SHAIKH	21
202101053016610	ANISHA AMAR SURVASE	30
202201053044335	SHIVALINGAMMA CHANDRAKANT TENGALE	48
202101053016600	BAPU SADASHIV ANUSE	0
202101053016831	RAMESH BAPU BANDGAR	17
202101053016834	AJAY BHAGWAT BANSODE	29
202101053016657	PRATHMESH LAXMAN CHAVAN	40
202101053016849	SWARUP RAJARAM CHAVAN	25
202101053016578	SWAPNIL MAHADEV DHULAGUDE	41
202101053016724	VISHWAJEET SANJAY GHADGE	28
202201053044379	SAMARTH PRAKASH HIPPARGI	40
202101053016729	VITTHAL SAINATH HOTKAR	8
202101053015906	PRATIK DADA KARE	21
202101053016869	ABHIJIT ASHOK KHALADKAR	15
202201053044314	SANKET CHANDRAKANT LENDAVE	49
202101053016716	GOPAL DATTA MADANE	39
202201053044383	RAHUL MANAGENI MASHALE	31
202101053016723	TUKARAM SHANKAR METAKARI	5
202201053044347	AVINASH SHARANAPPA NILGAR	43
202201053044356	VIGHNAHAR SHARAD NILGAR	30
202201053044342	ABHISHEK SURESH NIMBAL	54
202201053044380	YASH SATISH NIMBALKAR	3
202201053044300	MAHESH LAXMAN PADVALE	42
202101053016921	OM VIVEKANAND PATIL	32
202101053016897	RAJ MOHAN RONGE	28
202101053016926	AKASH SUBHASH SHEGAR	29
202101053016854	DATTATRAY MARUTI SHEJAL	19
202101053016900	YUVRAJ SITARAM SHINDE	30
202201053044359	SURESH BHIMANNA SUNAGAR	29
202201053044366	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	60
202201053044360	SHRAVAN SURYAKANT WAGHAMODE	37

Number of Students: 44

Tool CO Attainment

Target Level(%): 40

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

	Overall
No. of Students achieving Target Level	33
No. of Applicable Students	43
% Students achieving Target Level	76.74
Attainment	2

	Linked CO					
	CE55C.1	CE55C.2	CE55C.3	CE55C.4	CE55C.5	CE55C.6
Attainment	2	2	2	2	2	2

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: ISE-1
TOOL MAX. MARKS: 20

Name of Student	Linked CO	CE55C.1	CE55C.2	CE55C.1	CE55C.2	CE55C.1			CE55C.2		
	Max. Marks	2	2	6	10						
	Q. No. / Total Obtained Marks	Q1	Q2	Q3	Q4	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
SAYLI VIJAY ASHTUL	**16**	2	1	4.5	8	8	7	87.50	12	9	75.00
AISHWARYA ROHIDAS CHAVAN	**14**	1	0	5	8	8	6	75.00	12	8	66.67
NAMRATA DINKAR CHAVARE	**13**	1	1	5	6	8	6	75.00	12	7	58.33
SANIKA GAJANAN DESHMUKHE	**9**	1	1	5	2	8	6	75.00	12	3	25.00
KAJAL SHRAVAN KAMBLE	**13**	1	1	6	5	8	7	87.50	12	6	50.00
PRIYANKA PRATAP KARANDE	**15**	2	2	5	6	8	7	87.50	12	8	66.67
RUTUJA MAHESH KAWADE	**8**	1	1	4	2	8	5	62.50	12	3	25.00
PRIYANKA IRANNA KOLI	**15**	1	0	4.5	9	8	6	75.00	12	9	75.00
AISHWARYA PRADIP KUMBHAR	**11**	0	1	5	5	8	5	62.50	12	6	50.00
DIVYA RAJENDRA LATAKE	**12**	2	2	4	4	8	6	75.00	12	6	50.00
AAKANKSHA JAGANNATH MANE	**19**	2	2	6	9	8	8	100	12	11	91.67
POOJA DADASAHEB NAGANE	**11**	2	0	5.5	3	8	8	100	12	3	25.00
SNEHAL NAVNATH RONGE	**15**	1	1	5.5	7	8	7	87.50	12	8	66.67
ALVIRA AMIN SHAIKH	**9**	2	1	5	1	8	7	87.50	12	2	16.67

ANISHA AMAR SURVASE	**11**	1	1	5	4	8	6	75.00	12	5	41.67
SHIVALINGAMMA CHANDRAKANT TENGALE	**15**	2	2	5	6	8	7	87.50	12	8	66.67
RAMESH BAPU BANDGAR	**5**	2	2	0	1	8	2	25.00	12	3	25.00
AJAY BHAGWAT BANSODE	**11**	2	2	3	4	8	5	62.50	12	6	50.00
PRATHMESH LAXMAN CHAVAN	**19**	2	2	6	9	8	8	100	12	11	91.67
SWARUP RAJARAM CHAVAN	**8**	2	2	0	4	8	2	25.00	12	6	50.00
SWAPNIL MAHADEV DHULAGUDE	**14**	2	2	5	5	8	7	87.50	12	7	58.33
VISHWAJEET SANJAY GHADGE	**8**	2	2	4	0	8	6	75.00	12	2	16.67
SAMARTH PRAKASH HIPPARGI	**9**	2	2	5	0	8	7	87.50	12	2	16.67
VITTHAL SAINATH HOTKAR	**12**	2	2	4	4	8	6	75.00	12	6	50.00
PRATIK DADA KARE	**8**	2	2	2	2	8	4	50.00	12	4	33.33
ABHIJIT ASHOK KHALADKAR	**8**	2	2	2	2	8	4	50.00	12	4	33.33
SANKET CHANDRAKANT LENDAVE	**10**	2	2	6	0	8	8	100	12	2	16.67
GOPAL DATTA MADANE	**18**	2	2	5	9	8	7	87.50	12	11	91.67
RAHUL MANAGENI MASHALE	**12**	2	2	0	8	8	2	25.00	12	10	83.33
TUKARAM SHANKAR METAKARI	**14**	2	2	4	6	8	6	75.00	12	8	66.67
AVINASH SHARANAPPA NILGAR	**19**	2	2	6	9	8	8	100	12	11	91.67
VIGHNAHAR SHARAD NILGAR	**15**	2	2	5	6	8	7	87.50	12	8	66.67
ABHISHEK SURESH NIMBAL	**20**	2	2	5.5	10	8	8	100	12	12	100
YASH SATISH NIMBALKAR	**9**	2	2	5	0	8	7	87.50	12	2	16.67
MAHESH LAXMAN PADVALE	**10**	2	2	6	0	8	8	100	12	2	16.67
OM VIVEKANAND PATIL	**9**	2	2	5	0	8	7	87.50	12	2	16.67
RAJ MOHAN RONGE	**10**	2	2	5	1	8	7	87.50	12	3	25.00
AKASH SUBHASH SHEGAR	**12**	2	2	4	4	8	6	75.00	12	6	50.00
DATTATRAY MARUTI SHEJAL	**10**	2	2	5.5	0	8	8	100	12	2	16.67

YUVRAJ SITARAM SHINDE	**10**	2	2	5	0.5	8	7	87.50	12	3	25.00
SURESH BHIMANNA SUNAGAR	**14**	2	2	5	5	8	7	87.50	12	7	58.33
BHEEMASHANKAR RAJASHEKHAR TUKAMALI	**20**	2	2	6	10	8	8	100	12	12	100
SHRAVAN SURYAKANT WAGHAMODE	**15**	2	2	5.5	5	8	8	100	12	7	58.33

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C.1	CE55C.2
No. of Students achieving Target Level	38	15
No. of Applicable Students	43	43
% Students achieving Target Level	88.37	34.88
Attainment	3	0

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: OBT-1
TOOL MAX. MARKS: 20

Name of Student	Linked CO	CE55C.2	CE55C.2	CE55C.2	CE55C.2	CE55C.1	CE55C.1	CE55C.1	CE55C.1, CE55C.2	CE55C.1, CE55C.2	CE55C.1, CE55C.2	CE55C.1			CE55C.2		
	Max. Marks	2	2	2	2	2	2	2	2	2	2						
	Q. No. / Total Obtained Marks	Q1.1	Q1.2	Q1.3	Q1.4	Q1.5	Q1.6	Q1.7	Q1.8	Q1.9	Q1.10	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
SAYLI VIJAY ASHTUL	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
AISHWARYA ROHIDAS CHAVAN	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
NAMRATA DINKAR CHAVARE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
SANIKA GAJANAN DESHMUKHE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
KAJAL SHRAVAN KAMBLE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
PRIYANKA PRATAP KARANDE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
RUTUJA MAHESH KAWADE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
PRIYANKA IRANNA KOLI	**16**	2	2	0	2	2	2	0	2	2	2	12	10	83.33	14	12	85.71
AISHWARYA PRADIP KUMBHAR	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
DIVYA RAJENDRA LATAKE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
AAKANKSHA JAGANNATH MANE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
POOJA DADASAHEB NAGANE	**18**	2	2	2	2	2	2	0	2	2	2	12	10	83.33	14	14	100
SNEHAL NAVNATH RONGE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
ALVIRA AMIN SHAIKH	**18**	2	2	2	2	2	2	2	2	2	0	12	10	83.33	14	12	85.71
ANISHA AMAR SURVASE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
SHIVALINGAMMA CHANDRAKANT TENGALE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100

BAPU SADASHIV ANUSE	**0**	0	0	0	0	0	0	0	0	0	0	12	0	NA	14	0	NA
RAMESH BAPU BANDGAR	**14**	2	2	2	2	2	2	2	0	0	0	12	6	50.00	14	8	57.14
AJAY BHAGWAT BANSODE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
PRATHMESH LAXMAN CHAVAN	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
SWARUP RAJARAM CHAVAN	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
SWAPNIL MAHADEV DHULAGUDE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
VISHWAJEET SANJAY GHADGE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
SAMARTH PRAKASH HIPPARGI	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
VITTHAL SAINATH HOTKAR	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
PRATIK DADA KARE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
ABHIJIT ASHOK KHALADKAR	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
SANKET CHANDRAKANT LENDAVE	**16**	2	2	0	2	2	2	0	2	2	2	12	10	83.33	14	12	85.71
GOPAL DATTA MADANE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
RAHUL MANAGENI MASHALE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
TUKARAM SHANKAR METAKARI	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
AVINASH SHARANAPPA NILGAR	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
VIGHNAHAR SHARAD NILGAR	**18**	2	2	2	2	2	2	0	2	2	2	12	10	83.33	14	14	100
ABHISHEK SURESH NIMBAL	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
YASH SATISH NIMBALKAR	**18**	2	2	2	2	2	2	0	2	2	2	12	10	83.33	14	14	100
MAHESH LAXMAN PADVALE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
OM VIVEKANAND PATIL	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
RAJ MOHAN RONGE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
AKASH SUBHASH SHEGAR	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
DATTATRAY MARUTI SHEJAL	**18**	2	2	2	2	2	2	2	2	2	0	12	10	83.33	14	12	85.71
YUVRAJ SITARAM SHINDE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100

SURESH BHIMANNA SUNAGAR	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
BHEEMASHANKAR RAJASHEKHAR TUKAMALI	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100
SHRAVAN SURYAKANT WAGHAMODE	**20**	2	2	2	2	2	2	2	2	2	2	12	12	100	14	14	100

Number of Students: 44

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C.1	CE55C.2
No. of Students achieving Target Level	42	42
No. of Applicable Students	44	44
% Students achieving Target Level	95.45	95.45
Attainment	3	3

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: THT-1
TOOL MAX. MARKS: 20

Name of Student	Linked CO	CE55C.2	CE55C.2		
	Max. Marks	20			
	Q. No. / Total Obtained Marks	Q1	Max. Marks	Obtained Marks	% Marks
SAYLI VIJAY ASHTUL	**20**	20	20	20	100
AISHWARYA ROHIDAS CHAVAN	**19**	19	20	19	95.00
NAMRATA DINKAR CHAVARE	**19**	19	20	19	95.00
SANIKA GAJANAN DESHMUKHE	**18**	18	20	18	90.00
KAJAL SHRAVAN KAMBLE	**20**	20	20	20	100
PRIYANKA PRATAP KARANDE	**19**	19	20	19	95.00
RUTUJA MAHESH KAWADE	**16**	16	20	16	80.00
PRIYANKA IRANNA KOLI	**20**	20	20	20	100
AISHWARYA PRADIP KUMBHAR	**20**	20	20	20	100
DIVYA RAJENDRA LATAKE	**19**	19	20	19	95.00
AAKANKSHA JAGANNATH MANE	**19**	19	20	19	95.00
POOJA DADASAHEB NAGANE	**19**	19	20	19	95.00
SNEHAL NAVNATH RONGE	**19**	19	20	19	95.00
ALVIRA AMIN SHAIKH	**16**	16	20	16	80.00
ANISHA AMAR SURVASE	**19**	19	20	19	95.00
SHIVALINGAMMA CHANDRAKANT TENGALE	**20**	20	20	20	100
RAMESH BAPU BANDGAR	**18**	18	20	18	90.00
AJAY BHAGWAT BANSODE	**18**	18	20	18	90.00
PRATHMESH LAXMAN CHAVAN	**20**	20	20	20	100
SWARUP RAJARAM CHAVAN	**20**	20	20	20	100
SWAPNIL MAHADEV DHULAGUDE	**18**	18	20	18	90.00
VISHWAJEET SANJAY GHADGE	**16**	16	20	16	80.00
SAMARTH PRAKASH HIPPARGI	**20**	20	20	20	100
VITTHAL SAINATH HOTKAR	**16**	16	20	16	80.00

PRATIK DADA KARE	**12**	12	20	12	60.00
ABHIJIT ASHOK KHALADKAR	**16**	16	20	16	80.00
SANKET CHANDRAKANT LENDAVE	**16**	16	20	16	80.00
GOPAL DATTA MADANE	**16**	16	20	16	80.00
RAHUL MANAGENI MASHALE	**19**	19	20	19	95.00
TUKARAM SHANKAR METAKARI	**16**	16	20	16	80.00
AVINASH SHARANAPPA NILGAR	**19**	19	20	19	95.00
VIGHNAHAR SHARAD NILGAR	**19**	19	20	19	95.00
ABHISHEK SURESH NIMBAL	**20**	20	20	20	100
YASH SATISH NIMBALKAR	**16**	16	20	16	80.00
MAHESH LAXMAN PADVALE	**16**	16	20	16	80.00
OM VIVEKANAND PATIL	**16**	16	20	16	80.00
RAJ MOHAN RONGE	**16**	16	20	16	80.00
AKASH SUBHASH SHEGAR	**16**	16	20	16	80.00
DATTATRAY MARUTI SHEJAL	**16**	16	20	16	80.00
YUVRAJ SITARAM SHINDE	**12**	12	20	12	60.00
SURESH BHIMANNA SUNAGAR	**17**	17	20	17	85.00
BHEEMASHANKAR RAJASHEKHAR TUKAMALI	**20**	20	20	20	100
SHRAVAN SURYAKANT WAGHAMODE	**19**	19	20	19	95.00

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	**CE55C.2**
No. of Students achieving Target Level	**43**
No. of Applicable Students	**43**
% Students achieving Target Level	**100**
Attainment	**3**

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
DIRECT PO/PSO ATTAINMENT
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
ACADEMIC YEAR: 2023-24
GRADUATING BATCH: 2020-24

Direct PO/PSO Attainment for AY - 2023-24

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	ENGINEERING PHYSICS	C011-20 A I	3.00	3.00	**3.00**	3.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-	-	-
2	ENGINEERING CHEMISTRY	C012-20 B I	3.00	3.00	**3.00**	3.00	2.00	-	2.00	-	-	-	-	2.00	-	-	-	-	-	-
3	ENGINEERING MATHEMATICS-I	C112-20 A I	3.00	3.00	**3.00**	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
4	BASICS OF CIVIL AND MECHANICAL ENGINEERING	C113-20 A I	3.00	3.00	**3.00**	3.00	2.00	-	-	2.00	-	-	-	-	-	-	-	-	-	-
5	ENGINEERING MECHANICS	C114-20 A I	2.92	3.00	**2.98**	2.98	1.99	1.99	-	-	-	-	-	-	-	-	-	-	-	-
6	UNIVERSAL HUMAN VALUES	C115-20 A I	-	3.00	**3.00**	-	-	-	-	-	-	-	3.00	-	-	-	2.00	-	-	-
7	COMMUNICATION SKILLS	C116-20 A I	3.00	-	**3.00**	-	-	-	-	-	-	-	2.00	2.00	3.00	2.00	-	-	-	-
8	CREATIVITY & DESIGN THINKING	C117-20 A I	3.00	-	**3.00**	3.00	2.00	2.00	2.00	-	-	-	-	2.00	-	2.00	3.00	2.00	-	-
9	WORKSHOP PRACTICE	C118-20 A I	3.00	-	**3.00**	3.00	2.00	3.00	-	-	-	-	-	-	-	-	-	-	-	-
10	ENGINEERING PHYSICS	C011-20 B II	3.00	3.00	**3.00**	3.00	2.00	-	2.00	-	-	-	-	-	-	-	-	-	-	-
11	ENGINEERING CHEMISTRY	C012-20 A II	3.00	3.00	**3.00**	3.00	2.00	-	2.00	-	-	-	-	2.00	-	-	-	-	-	-
12	ENGINEERING MATHEMATICS - II	C122-20 A II	3.00	3.00	**3.00**	3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
13	BASIC ELECTRICAL & ELECTRONICS ENGINEERING	C123-20 A II	3.00	3.00	**3.00**	3.00	2.00	2.00	-	-	2.00	-	-	-	-	-	-	-	-	-
14	PROGRAMMING FOR PROBLEM SOLVING	C124-20 A II	3.00	3.00	**3.00**	3.00	2.00	2.00	2.00	-	-	-	-	-	-	-	2.00	2.00	2.00	2.00
15	ENGINEERING GRAPHICS AND CAD	C125-20 A II	3.00	3.00	**3.00**	3.00	2.00	-	-	2.00	-	-	-	-	3.00	-	-	-	-	-
16	PROFESSIONAL COMMUNICATION	C126-20 A II	3.00	-	**3.00**	-	-	-	-	-	-	-	2.00	2.00	3.00	2.00	-	-	-	-
17	SURVEYING & GEOMATICS	CE31C A I	3.00	3.00	**3.00**	-	-	3.00	3.00	2.00	-	-	-	3.00	2.00	-	-	3.00	3.00	2.00
18	FLUID MECHANICS AND FLUID MACHINES	CE32C A I	2.42	3.00	**2.88**	1.92	1.92	0.96	-	-	-	-	-	-	-	-	-	2.88	-	-
19	CONCRETE TECHNOLOGY, MATERIAL TESTING & EVALUATION	CE33C A I	3.00	3.00	**3.00**	-	3.00	-	3.00	-	-	-	-	-	-	-	-	3.00	3.00	-
20	BUILDING CONSTRUCTION & DRAWING	CE34C A I	3.00	3.00	**3.00**	-	-	3.00	-	3.00	-	1.00	-	-	-	-	-	3.00	-	2.00
21	STRUCTURAL MECHANICS-I	CE35C A I	3.00	3.00	**3.00**	-	3.00	3.00	-	-	-	-	-	-	-	-	-	3.00	-	-
22	SURVEYING & GEOMATICS	CE36L A I	3.00	3.00	**3.00**	-	-	3.00	3.00	3.00	-	-	-	3.00	2.00	-	-	3.00	2.00	2.00
23	FLUID MECHANICS AND FLUID MACHINES	CE37L A I	2.70	3.00	**2.94**	2.55	1.96	-	-	-	-	-	-	-	-	-	-	2.94	-	-
24	CONCRETE TECHNOLOGY, MATERIAL TESTING & EVALUATION	CE38L A I	2.33	-	**2.33**	-	-	1.56	2.33	-	-	-	-	-	-	-	-	1.56	2.33	-
25	BUILDING CONSTRUCTION & DRAWING	CE39L A I	3.00	-	**3.00**	-	-	-	-	3.00	-	1.00	-	-	-	-	-	3.00	-	2.33
26	LAB PRACTICE	CE410L A I	3.00	-	**3.00**	3.00	-	3.00	-	3.00	-	-	-	-	3.00	-	-	2.00	-	3.00
27	SURVEYING & GEOMATICS	CE31C B I	3.00	3.00	**3.00**	-	-	3.00	3.00	2.00	-	-	-	3.00	2.00	-	-	3.00	3.00	2.00
28	FLUID MECHANICS AND FLUID MACHINES	CE32C B I	2.25	3.00	**2.85**	2.85	1.90	0.95	-	-	-	-	-	-	-	-	-	2.85	-	-

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
29	CONCRETE TECHNOLOGY, MATERIAL TESTING & EVALUATION	CE33C B I	3.00	3.00	**3.00**	-	3.00	-	3.00	-	-	-	-	-	-	-	-	3.00	3.00	-
30	BUILDING CONSTRUCTION & DRAWING	CE34C B I	3.00	3.00	**3.00**	-	-	3.00	-	3.00	-	1.00	-	-	-	-	-	3.00	-	2.00
31	STRUCTURAL MECHANICS-I	CE35C B I	3.00	3.00	**3.00**	-	3.00	3.00	-	-	-	-	-	-	-	-	-	3.00	-	-
32	SURVEYING & GEOMATICS	CE36L B I	3.00	3.00	**3.00**	-	-	3.00	3.00	3.00	-	-	-	3.00	2.00	-	-	3.00	2.00	3.00
33	FLUID MECHANICS AND FLUID MACHINES	CE37L B I	3.00	3.00	**3.00**	3.00	2.00	-	-	-	-	-	-	-	-	-	-	3.00	-	-
34	CONCRETE TECHNOLOGY, MATERIAL TESTING & EVALUATION	CE38L B I	2.17	-	**2.17**	-	-	1.44	2.17	-	-	-	-	-	-	-	-	1.44	2.17	-
35	BUILDING CONSTRUCTION & DRAWING	CE39L B I	3.00	-	**3.00**	-	2.25	2.25	-	-	2.00	1.00	-	-	-	-	-	1.75	2.33	1.33
36	LAB PRACTICE	CE410L B I	3.00	-	**3.00**	3.00	-	3.00	-	3.00	-	-	-	-	3.00	-	-	2.00	-	3.00
37	ENVIRONMENTAL ENGINEERING-I	CE41C A II	2.92	3.00	**2.98**	-	2.98	2.98	-	-	2.98	-	-	-	-	-	-	2.98	2.98	1.99
38	BUILDING PLANNING & DESIGN	CE42C A II	2.96	3.00	**2.99**	-	-	-	-	2.99	-	-	2.99	-	2.99	-	-	2.99	-	2.99
39	STRUCTURAL MECHANICS-II	CE43C A II	3.00	3.00	**3.00**	-	3.00	3.00	-	-	-	-	-	-	-	-	-	3.00	-	-
40	ENGINEERING MATHEMATICS-III	CE44B A II	2.92	3.00	**2.98**	2.98	1.98	-	1.98	-	-	-	-	-	-	-	1.98	-	1.98	0.99
41	ENGINEERING GEOLOGY	CE45B A II	2.93	3.00	**2.99**	1.99	2.99	-	2.99	-	-	-	-	-	1.99	-	-	1.99	2.99	-
42	ENVIRONMENTAL ENGINEERING-I	CE46L A II	3.00	-	**3.00**	2.50	-	3.00	-	-	3.00	-	-	-	-	-	-	3.00	2.50	2.00
43	BUILDING PLANNING & DESIGN	CE47L A II	3.00	3.00	**3.00**	-	-	-	-	3.00	3.00	-	-	-	3.00	-	-	3.00	-	3.00
44	COMPUTER PROGRAMMING & NUMERICAL METHODS	CE48L A II	3.00	3.00	**3.00**	-	3.00	-	-	2.00	-	-	-	-	3.00	-	-	-	-	3.00

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
45	ENGINEERING GEOLOGY	CE49L A II	3.00	3.00	**3.00**	-	-	-	2.00	2.00	1.67	2.67	2.00	2.50	2.00	-	2.00	-	2.00	1.00
46	DESIGN THINKING	HN411 A II	2.88	3.00	**2.98**	-	2.98	2.98	-	-	-	2.98	-	2.98	2.98	-	-	2.98	-	-
47	ENVIRONMENTAL ENGINEERING-I	CE41C B II	3.00	3.00	**3.00**	-	3.00	3.00	-	-	3.00	-	-	-	-	-	-	3.00	3.00	2.00
48	BUILDING PLANNING & DESIGN	CE42C B II	3.00	3.00	**3.00**	-	-	-	-	3.00	-	-	3.00	-	3.00	-	-	3.00	-	3.00
49	STRUCTURAL MECHANICS-II	CE43C B II	3.00	3.00	**3.00**	-	3.00	3.00	-	-	-	-	-	-	-	-	-	3.00	-	-
50	ENGINEERING MATHEMATICS-III	CE44B B II	2.96	3.00	**2.99**	2.99	1.99	-	1.99	-	-	-	-	-	-	-	1.99	-	1.99	1.00
51	ENGINEERING GEOLOGY	CE45B B II	2.95	3.00	**2.99**	-	2.99	-	2.99	-	-	-	-	-	-	-	-	1.99	2.99	-
52	ENVIRONMENTAL ENGINEERING-I	CE46L B II	3.00	-	**3.00**	2.50	-	3.00	-	-	3.00	-	-	-	-	-	-	3.00	2.50	2.00
53	BUILDING PLANNING & DESIGN	CE47L B II	3.00	3.00	**3.00**	-	-	-	-	3.00	-	-	3.00	-	3.00	-	-	3.00	-	3.00
54	COMPUTER PROGRAMMING & NUMERICAL METHODS	CE48L B II	3.00	3.00	**3.00**	-	3.00	-	-	2.00	-	-	-	-	3.00	-	-	-	-	3.00
55	ENGINEERING GEOLOGY	CE49L B II	3.00	3.00	**3.00**	-	-	-	2.00	-	-	3.00	-	-	-	-	-	-	2.00	2.00
56	DESIGN THINKING	HN411 B II	2.92	3.00	**2.98**	-	2.98	2.98	-	-	-	2.98	-	2.98	2.98	-	-	2.98	-	-
57	ENVIRONMENTAL ENGINEERING-II	CE510L A I	3.00	3.00	**3.00**	-	-	-	3.00	-	-	-	-	-	-	-	-	2.00	-	-
58	DESIGN OF STEEL STRUCTURES	CE51C A I	2.53	1.00	**1.31**	-	1.31	1.31	-	-	-	-	-	-	-	-	-	1.31	-	-
59	GEOTECHNICAL ENGINEERING	CE52C A I	2.66	3.00	**2.93**	-	2.93	-	2.93	-	-	-	-	-	-	-	-	2.93	2.93	-
60	HIGHWAY AND TUNNEL ENGINEERING	CE53C A I	2.58	3.00	**2.92**	-	-	2.92	1.94	-	-	-	-	-	-	-	-	2.92	1.94	-

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
61	HYDROLOGY AND WATER RESOURCES ENGINEERING	CE54C A I	2.50	0.00	**0.50**	-	0.50	0.50	0.50	-	0.50	-	-	-	-	-	-	0.50	-	-
62	DESIGN OF CONCRETE STRUCTURES I	CE55C A I	2.39	1.00	**1.28**	-	1.28	1.28	-	-	-	-	-	-	-	-	-	1.28	-	-
63	ENVIRONMENTAL ENGINEERING-II	CE56C A I	2.14	0.00	**0.43**	-	-	0.43	0.43	0.29	0.29	-	0.14	-	-	-	-	0.29	0.43	0.29
64	GEOTECHNICAL ENGINEERING	CE57L A I	3.00	3.00	**3.00**	-	-	-	3.00	-	-	-	-	-	-	-	-	-	3.00	-
65	HIGHWAY & TUNNEL ENGINEERING	CE58L A I	3.00	-	**3.00**	-	-	-	3.00	-	-	-	-	-	-	-	-	-	3.00	-
66	PLANNING & DESIGN OF PUBLIC BUILDING	CE59L A I	3.00	3.00	**3.00**	-	-	-	2.00	3.00	-	-	3.00	-	-	-	-	3.00	2.00	1.00
67	MANAGING INNOVATION AND ENTREPRENEURSHIP	HN512 A I	2.02	3.00	**2.80**	-	1.87	1.87	-	-	1.87	0.93	0.93	-	0.93	0.93	0.93	-	-	-
68	HSS COURSE â€“ ELECTIVE (SELF LEARNING MODE)	SL-5 A I	-	3.00	**3.00**	-	-	-	-	-	-	3.00	3.00	-	-	-	-	-	-	-
69	ENVIRONMENTAL ENGINEERING-II	CE510L B I	3.00	3.00	**3.00**	-	-	-	3.00	-	-	-	-	-	-	-	-	2.00	-	-
70	DESIGN OF STEEL STRUCTURES	CE51C B I	2.54	3.00	**2.91**	-	2.91	2.91	-	-	-	-	-	-	-	-	-	2.91	-	-
71	GEOTECHNICAL ENGINEERING	CE52C B I	2.55	3.00	**2.91**	-	-	2.91	-	2.91	-	-	-	-	-	-	-	2.91	2.91	-
72	HIGHWAY AND TUNNEL ENGINEERING	CE53C B I	2.67	3.00	**2.93**	-	-	2.93	1.96	-	-	-	-	-	-	-	-	2.93	1.96	-
73	HYDROLOGY AND WATER RESOURCES ENGINEERING	CE54C B I	2.66	3.00	**2.93**	2.93	2.93	2.93	2.93	-	-	-	-	-	-	-	-	-	-	-
74	DESIGN OF CONCRETE STRUCTURES I	CE55C B I	2.30	2.00	**2.06**	-	2.06	2.06	-	-	-	-	-	-	-	-	-	2.06	-	-
75	ENVIRONMENTAL ENGINEERING-II	CE56C B I	2.27	3.00	**2.85**	-	-	2.85	2.85	1.90	1.90	-	0.95	-	-	-	-	1.90	2.85	2.85
76	GEOTECHNICAL ENGINEERING	CE57L B I	3.00	3.00	**3.00**	-	-	-	3.00	-	-	-	-	-	-	-	-	-	3.00	-

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
77	HIGHWAY & TUNNEL ENGINEERING	CE58L B I	3.00	-	**3.00**	-	-	-	3.00	-	-	-	-	-	-	-	-	-	3.00	-
78	PLANNING & DESIGN OF PUBLIC BUILDING	CE59L B I	3.00	3.00	**3.00**	-	-	-	2.00	3.00	-	-	3.00	-	-	-	-	3.00	2.00	1.00
79	MANAGING INNOVATION AND ENTREPRENEURSHIP	HN512 B I	2.16	3.00	**2.83**	-	1.89	1.89	-	-	1.89	0.94	0.94	-	0.94	0.94	0.94	-	-	-
80	HSS COURSE â€“ ELECTIVE (SELF LEARNING MODE)	SL-5 B I	-	3.00	**3.00**	-	-	-	-	-	-	3.00	3.00	-	-	-	-	-	-	-
81	FOUNDATION ENGINEERING	CE61C A II	2.68	2.00	**2.14**	-	1.42	2.14	2.14	-	-	-	-	-	-	-	-	1.42	2.14	-
82	HYDRAULIC STRUCTURES AND WATER POWER ENGG	CE62C A II	2.31	3.00	**2.86**	-	-	2.86	2.86	-	-	-	-	-	-	-	-	2.86	2.86	-
83	PROFESSIONAL ELECTIVE COURSE-I-ACT	CE63E A II	2.56	3.00	**2.91**	-	2.91	2.91	-	-	-	-	-	-	-	-	-	2.91	-	-
84	DESIGN OF CONCRETE STRUCTURES II	CE64C A II	2.70	2.00	**2.14**	-	2.14	2.14	-	-	-	-	-	-	-	-	-	2.14	-	-
85	PRINCIPLES OF MANAGEMENT AND QUANTITATIVE TECHNIQUES	CE65C A II	2.38	3.00	**2.88**	-	2.88	2.88	-	2.88	-	-	-	2.88	2.88	2.88	-	1.92	-	2.88
86	RAILWAY, AIRPORT & HARBOUR ENGINEERING	CE66C A II	2.12	3.00	**2.82**	-	2.82	2.82	-	-	-	-	-	-	-	-	-	2.82	-	-
87	PROJECT ON STEEL STRUCTURES	CE67L A II	3.00	3.00	**3.00**	-	3.00	3.00	-	3.00	-	-	-	-	3.00	-	-	3.00	-	3.00
88	PRINCIPLES OF MANAGEMENT AND QUANTITATIVE TECHNIQUES	CE68L A II	2.00	3.00	**2.80**	-	-	2.80	2.80	2.80	-	-	-	2.80	2.80	-	-	1.87	1.87	2.80
89	MINI PROJECT USING APPLICATION SOFTWARE	CE69L A II	3.00	-	**3.00**	3.00	3.00	3.00	2.00	3.00	2.00	2.50	2.00	2.00	3.00	2.00	3.00	3.00	2.00	3.00
90	ENGINEERING SYSTEM DESIGN OPTIMIZATION	HN613 A II	1.98	3.00	**2.80**	2.80	2.80	-	2.80	2.80	-	-	-	-	-	-	-	1.86	-	-
91	FOUNDATION ENGINEERING	CE61C B II	2.62	3.00	**2.92**	-	1.95	2.92	2.92	-	-	-	-	-	-	-	-	1.95	2.92	-
92	HYDRAULIC STRUCTURES AND WATER POWER ENGG	CE62C B II	2.57	3.00	**2.91**	-	-	2.91	2.91	-	-	-	-	-	-	-	-	2.91	2.91	-

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
93	PROFESSIONAL ELECTIVE COURSE-I-ACT	CE63E B II	2.78	3.00	**2.96**	-	2.96	2.96	-	-	-	-	-	-	-	-	-	2.96	-	-
94	DESIGN OF CONCRETE STRUCTURES II	CE64C B II	2.17	3.00	**2.83**	-	2.83	2.83	-	-	-	-	-	-	-	-	-	2.83	-	-
95	PRINCIPLES OF MANAGEMENT AND QUANTITATIVE TECHNIQUES	CE65C B II	2.13	3.00	**2.83**	-	-	2.83	2.83	2.83	-	-	-	2.83	2.83	-	-	1.88	1.88	2.83
96	RAILWAY, AIRPORT & HARBOUR ENGINEERING	CE66C B II	2.51	3.00	**2.90**	-	2.90	2.90	-	-	-	-	-	-	-	-	-	2.90	-	-
97	PROJECT ON STEEL STRUCTURES	CE67L B II	3.00	3.00	**3.00**	-	3.00	3.00	-	3.00	-	-	-	-	3.00	-	-	3.00	-	3.00
98	PRINCIPLES OF MANAGEMENT AND QUANTITATIVE TECHNIQUES	CE68L B II	2.10	3.00	**2.82**	-	-	2.82	2.82	2.82	-	-	-	2.82	2.82	-	-	1.88	1.88	1.88
99	MINI PROJECT USING APPLICATION SOFTWARE	CE69L B II	3.00	-	**3.00**	3.00	3.00	3.00	2.00	3.00	2.00	2.50	2.00	2.00	3.00	2.00	3.00	3.00	2.00	3.00
100	ENGINEERING SYSTEM DESIGN OPTIMIZATION	HN613 B II	2.27	3.00	**2.85**	2.85	2.85	-	2.85	2.85	-	-	-	-	-	-	-	1.90	-	-
101	ESTIMATING, COSTING AND VALUATION	CE71C A I	2.55	3.00	**2.91**	-	2.91	1.94	-	-	-	-	1.94	-	-	2.91	1.94	2.91	-	-
102	EARTHQUAKE ENGINEERING	CE72C A I	2.43	3.00	**2.89**	-	2.89	2.89	-	-	-	-	-	-	-	-	-	2.89	-	-
103	CONSTRUCTION MANAGEMENT AND PRACTICES	CE73C A I	2.41	3.00	**2.65**	-	2.65	2.65	2.47	2.65	-	-	-	-	2.65	2.65	-	-	-	2.65
104	PROFESSIONAL ELECTIVE COURSE-II TRAFFIC ENGINEERING AND MANAGEMENT	CE74E A I	2.88	3.00	**2.98**	-	2.98	2.98	-	-	-	-	-	-	-	-	-	2.65	-	-
105	ESTIMATING COSTING AND VALUATION	CE75L A I	3.00	3.00	**3.00**	-	3.00	3.00	-	3.00	-	-	-	-	-	-	-	3.00	-	3.00
106	CONSTRUCTION MANAGEMENT AND PRACTICES	CE76L A I	-	3.00	**3.00**	3.00	2.00	-	2.00	-	2.00	-	2.00	-	2.00	1.00	2.00	3.00	3.00	3.00
107	PROJECT ON R. C. C. STRUCTURES	CE77P A I	3.00	3.00	**3.00**	-	3.00	3.00	-	3.00	-	-	-	-	3.00	-	-	3.00	-	3.00
108	SEMINAR	CE78S A I	3.00	3.00	**3.00**	-	2.00	3.00	3.00	3.00	3.00	3.00	2.00	2.67	3.00	3.00	3.00	3.00	2.67	3.00

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
109	ASSESSMENT OF REPORT ON FIELD TRAINING	CE79V A I	3.00	-	**3.00**	2.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00
110	CIVIL ENGINEERING SYSTEM ANALYSIS AND DESIGN	HN714 A I	2.50	3.00	**2.90**	-	1.93	1.93	-	2.90	2.90	-	1.93	2.90	1.93	2.90	2.90	1.93	-	2.90
111	ESTIMATING, COSTING AND VALUATION	CE71C B I	2.56	3.00	**2.91**	-	2.91	1.94	-	-	-	-	1.94	-	-	2.91	1.94	2.91	-	-
112	EARTHQUAKE ENGINEERING	CE72C B I	2.36	3.00	**2.87**	-	2.87	2.87	-	-	-	-	-	-	-	-	-	2.87	-	-
113	CONSTRUCTION MANAGEMENT AND PRACTICES	CE73C B I	1.65	3.00	**2.19**	-	2.19	2.19	2.04	2.19	-	-	-	-	2.19	2.19	-	-	-	2.19
114	PROFESSIONAL ELECTIVE COURSE-II TRAFFIC ENGINEERING AND MANAGEMENT	CE74E B I	2.95	3.00	**2.99**	-	2.99	2.99	-	-	-	-	-	-	-	-	-	2.66	-	-
115	ESTIMATING COSTING AND VALUATION	CE75L B I	3.00	3.00	**3.00**	-	3.00	3.00	-	3.00	-	-	-	-	-	-	-	3.00	-	3.00
116	CONSTRUCTION MANAGEMENT AND PRACTICES	CE76L B I	-	3.00	**3.00**	3.00	2.00	-	2.00	-	2.00	-	2.00	-	2.00	1.00	2.00	3.00	3.00	3.00
117	PROJECT ON R. C. C. STRUCTURES	CE77P B I	3.00	3.00	**3.00**	-	3.00	3.00	-	3.00	-	-	-	-	3.00	-	-	3.00	-	3.00
118	SEMINAR	CE78S B I	-	3.00	**3.00**	-	2.00	3.00	3.00	3.00	3.00	3.00	2.00	2.67	3.00	3.00	3.00	3.00	2.67	3.00
119	ASSESSMENT OF REPORT ON FIELD TRAINING	CE79V B I	3.00	-	**3.00**	2.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00
120	CIVIL ENGINEERING SYSTEM ANALYSIS AND DESIGN	HN714 B I	2.06	3.00	**2.81**	-	1.87	1.87	-	2.81	2.81	-	1.87	2.81	1.87	2.81	2.81	1.87	-	2.81
121	PROFESSIONAL ELECTIVE III - RAPAIR & REHABILATION OF STRUCTURES	CE75E A II	-	3.00	**3.00**	-	3.00	-	-	-	-	-	3.00	-	-	-	2.00	2.00	-	3.00
122	PROFESSIONAL PRACTICE LAW AND ETHICS	CE81H A II	-	3.00	**3.00**	2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
123	PROJECT WORK	CE8P A II	3.00	3.00	**3.00**	3.00	3.00	3.00	2.25	3.00	3.00	2.33	2.33	3.00	3.00	3.00	2.50	2.17	2.50	2.33

Sr. No.	Course	Course Code	Internal Attainment	External Attainment	Overall CO Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
124	SELF LEARNING TECHNICAL COURSE	SL-2 A II	-	3.00	**3.00**	2.60	2.00	2.67	2.00	-	-	2.50	2.00	-	-	-	-	2.83	2.67	2.33
125	PROFESSIONAL ELECTIVE III - RAPAIR & REHABILATION OF STRUCTURES	CE75E B II	-	3.00	**3.00**	-	3.00	-	-	-	-	-	3.00	-	-	-	2.00	2.00	-	3.00
126	PROFESSIONAL PRACTICE LAW AND ETHICS	CE81H B II	-	3.00	**3.00**	2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
127	PROJECT WORK	CE8P B II	3.00	2.00	**3.00**	3.00	3.00	3.00	2.25	3.00	3.00	2.33	2.33	3.00	3.00	3.00	2.50	2.17	2.50	2.33
128	SELF LEARNING TECHNICAL COURSE	SL-2 B II	-	3.00	**3.00**	-	2.00	-	-	2.00	-	-	-	-	-	-	-	-	-	-
Direct Attainment						**2.77**	**2.47**	**2.56**	**2.45**	**2.70**	**2.35**	**2.27**	**2.23**	**2.65**	**2.58**	**2.23**	**2.31**	**2.55**	**2.49**	**2.44**

Direct Course Outcome Attainment Tools

1. Assignment
2. Lab Journal
3. In Semester Exam
4. Class Test
5. Open Book Test
6. Take Home Test
7. Lab Test
8. Seminar/ Project work

Assignment

INDEX

(Assignment / Tutorial Book Assessment)

Sr. No.	Title of Assignment / Tutorial	Page No.	CO	Date		Marks (25)			Total Marks (25)	Sign.
				Given	Checked	Timely Submission (10)	Presentation (10)	Oral (5)		
1]	Assignment No.1 [Introduction]	1	I	9/8	21/08	10	10	5	25	21/08
2]	Design of slab [LSM]	5	II	21/8/23	25/09	8	10	5	23	25/09
3]	Limit state of collapse	26	III	4/9/23	27/09	10	10	4	24	27/09/23
4]	Analysis & Design of the triangular flange	31	IV	24/9/23	22/10	10	10	4	24	22/10/23
5]	Design of continuous beam	33	IV	20/10/23	17/11	9	9	5	23	17/11/23
6]	Design of Beam	45	V	3/11/23	21/11	09	9	4	22	21/11/23
7]	Design of axially as well as eccentrically loaded column	51	VI	20/11/23 2	06/12	10	9	4	23	06/12/23

CERTIFICATE

This is certify that Mr. / Miss. / Mrs. Aakanksha Jagannath Mane of Class T.Y.B.Tech Division A Roll No 11 Semester I has completed satisfactorily Assignments/Tutorials in Design of concrete structure during the academic year 2023

Date : 06/12/23

Subject Teacher | Head of Department | Principal

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Internal Continuous Assessment (ICA) Tools

Journal

INDEX

(Assignment / Tutorial Book Assessment)

Sr. No.	Title of Assignment / Tutorial	Page No.	CO	Date		Marks (25)			Total Marks (25)	Sign.
				Given	Checked	Timely Submission (10)	Presentation (10)	Oral (5)		
1)	Ingredi ents of concrete Cement.	1-10	1,2	7/8	3/9	10	9	3	22	
2)	Ingridents of Concrete Coars Agg & fine agg of water.	11-16	1,2	9/9	21/9	10	9	3	22	
3)	properties of fresh Concrete	17-24	3,4	30/9	20/10	10	9	4	23	
4)	Desired Properties of Concrete.	24-28	4	22/10	10/11	10	9	4	23	
5)	Creep And Shrinkge	29-34	5	16/11	28/11	10	10	3	23	
6)	Durability of Concrete.	34-42	5	28/11	6/12 7/12	10	10	4	24	
7)	Concrete Mix Desing	42-47	5	6/12	16/12	10	10	4	24	
8)	Testing of Materials.	47-51	6	14/12	18/12	10	10	4	24	

CERTIFICATE

This is certify that Mr. / Miss. / Mrs. Salgar Rutuja Sadashiv ..... of Class ...S.Y.... Division ...B.... Roll No ...25.. Semester III... has completed satisfactorily Assignments/Tutorials in .....CTMTE..... during the academic year ..23-24

Date : 8/12/23

Subject Teacher | Head of Department | Principal

INDEX

(Assignment / Tutorial Book Assessment)

Sr. No.	Title of Assignment / Tutorial	Page No.	CO	Date		Marks (25)			Total Marks (25)	Sign.
				Given	Checked	Timely Submission (10)	Presentation (10)	Oral (5)		
1	Specifications	1	CO1	18/08/23	8/9	9	9	4	22	5/9
2	Estimation / Measurment of various items	5	CO1 CO2	18/9/23	25/9	9	9	4	22	6/25/9
3	Rate Analysis	13	CO1 CO2	25/9	5/10	9	9	3	21	two
4	Casting	20	CO1 CO4	5/10	11/10	9	8	3	20	two
5	Tender	22	CO1 CO5	12/10	19/10	10	9	4	23	9/10
6	principles of valuation	30	CO1 CO5	20/10	25.11	10	9	4	23	11.23

CERTIFICATE

This is certify that Mr. / Miss. / ~~Mrs~~... Adishakti Abasaheb Jawade.... of Class T.Y..... Division ..A..... Roll No .06... Semester ..~~VIII~~ V. has completed satisfactorily Assignments/Tutorials in Estimation, costing & Valuation during the academic year ~~2023~~ 23-24

Date :

Subject Teacher 28.11.23

Head of Department

B. Rongé
Principal

INDEX

(Assignment / Tutorial Book Assessment)

Sr. No.	Title of Assignment / Tutorial	Page No.	CO	Date		Marks (25)			Total Marks (25)	Sign.
			CESSC	2023 Given	Checked	Timely Submission (10)	Presentation (10)	Oral (5)		
1.	Introduction	1.	1.	9/08	26/08	10	10	5	25	28/8
2.	Design of Slab	6.	2	2/10	03/10	7	9	4	20	03/10
3.	Limit State of Collapse.	34.	3	4/09	10/10	8	10	4	23	10/10
4.	Analysis & Design of flanged Structure.	39.	4.	24/09	01/11	08	10	04	22.	01/11
5.	Beam	41.	4	20/10	07/11	08	10	04	22	07/11
6.	Design of Beam Subjected to combine bending, Shear & torsion.	58.	5	3/11	23/11	10	09	03	22.	23/11
7.	Design of an axially as well as eccentrically loaded Column.	60.	6.	20/11	06/12	10	9	4	23	06/12/23

CERTIFICATE

This is certify that ~~Mr.~~ / Miss. / ~~Mrs~~ Latake Divya Rajendra of Class T.Y. Division A Roll No 10 Semester I has completed satisfactorily Assignments/Tutorials in DCS – I during the academic year 2023-24

Date : 06/12/23

Subject Teacher | Head of Department | Principal

INDEX

(Assignment / Tutorial Book Assessment)

Sr. No.	Title of Assignment / Tutorial	Page No.	CO	Date		Marks (25)			Total Marks (25)	Sign.
				Given	Checked	Timely Submission (10)	Presentation (10)	Oral (5)		
1)	Design thinking skills-	1-5	CO1	4-2-24	12-2	10	10	4	24	Nisk 12-2-24.
2)	customer need and	6-12	CO2	8-2	26-2					
	product specification					10	10	4	24	Nisk 26-2-24
3)	Creativity & prototyping	13-16	CO3	4-3	8-4	10	10	4	24	Nisk 6-4-24.
4)	Products Architecture & financial Analysis	19-21	CO5	5-4	12-4	10	10	4	24	Nisk 12-4-24
5)	Design for environment	22-25	CO6	20-4	30-4	10	10	5	25	Nisk 30-4-24
6)	Design for service	26-28	CO4	26-4	2-05	08	10	5	23	Nisk 2-5-24

CERTIFICATE

This is certify that Mr. / Miss. / Mrs. Bhong Prapti Dattatray of Class SY Division A Roll No 03 Semester IV has satisfactorily completed Assignments/Tutorials in DT during the academic year 2023-24

Date : 9/5/24

Subject Teacher — Head of Department — Principal

INDEX

(Assignment / Tutorial Book Assessment)

Sr. No.	Title of Assignment / Tutorial	Page No.	CO	Date		Marks (25)			Total Marks (25)	Sign.
				Given	Checked	Timely Submission (10)	Presentation (10)	Oral (5)		
1.	function of management	1	1	24/2	26/3	10	10	4	24	26/3/24
2	Importance of Decisi-	7.	1	25/3	2/4	10	10	4	24	2/4/24
	-on making.									
3.	Decision under un-	13	2	4/4	10/4	10	10	4	24	10/4/24
	certinity.									
4.	Introduction to lean	17	3	9/4	15/4	10	10	4	24	15/4/24
	construction									
5	Inventory control	20	4	17/4	22/4	10	10	4	24	22/4/24
6	construction external	26	4	24/4	30/4	10	10	4	24	30/4/24
	resource planning									
7.	quality control.	31	6	30/4	2/5	10	10	4	24	30/4/24

CERTIFICATE

This is certify that Mr. / Miss. / Mrs. Jadhav Gauri Sunil of

Class TY Division B Roll No 06 Semester II has satisfactorily completed

Assignments/Tutorials in PMGT during the academic year 2023-24

Date :

Subject Teacher

Head of Department

B. Pongle

Principal

INDEX

(Laboratory Book Assessment)

Sr. No.	Title of Experiment	Page No.	CO	Date of Expt.		Marks (25)					Total (25)	Sign.
				Performed	Submitted	Attendance (5)	Performance (5)	Submission (5)	Presentation (5)	Oral (5)		
1	fineness of cement	1	I	25/8	11/9	5	4	5	4	5	23	
2	Standard consistency of cement	3	II	1-9	29-9	5	4	4	5	5	23	
3	Setting time of cement	4	II	29-9	1-10	5	5	4	5	5	24	
4	Soundness of cement	6	III	9-10	20-10	5	4	4	5	5	23	
5	Comp strength of concrete	7	V	20-10	23-10	5	4	5	4	5	23	
6	~~fineness modulus & grading~~ of aggregate	8	I	23-10	03-11	5	4	4	5	5	25	
7	Determination of Silt content	11	II	3-11	17-11	5	4	5	5	5	24	
8	Determination of SP gravity of cement	14	II	17-11	23-11	5	5	4	5	5	24	
9	sp. gravity of coarse Agg	15	II	24-11	25-11	5	5	4	5	5	24	
10	Bulk density of agg	19	II	25-11	26-11	5	4	5	5	5	24	
11	determination of ~~elon~~ bulking of fine aggregate	23	II	26-12	13-12	5	5	5	4	5	24	
			II	13-12	25/12	5	5	4	5	5	24	
12	determination of elongation & flakyness index	25	II	1119	29/9	5	4	4	5	5	23	
				29-9	1-10	5						
13	Workability of concrete	27	III	9-10	20-10	5	4	5	5	4	23	
14	comp. strength of concrete	29	IV	20-10	23-10	5	5	4	5	5	24	
				23-10	03-11							

CERTIFICATE

This is certify that Mr. / Miss. / Mrs. Bhong Prapti Dattatraya of Class SY BTech Division A Roll No 70 Semester III rd has completed satisfactorily Experiments in CIVIL during the academic year 2023-24

Date :

Subject Teacher | Head of Dept. | Principal

INDEX

(Laboratory Book Assessment)

Sr. No.	Title of Experiment	Page No.	CO	Date of Expt.		Marks (25)					Total (25)	Sign.
				Performed	Submitted	Attendance (5)	Performance (5)	Submission (5)	Presentation (5)	Oral (5)		
1.	Reading Drawing	01	CE71C. 1	13/09	20/9	5	5	5	3	3	21	
2.	Market Survey	14	CE71C2	22/09	27/9	5	5	5	3	3	21	
3.	Specification	20	CE71C. 1	04/10	13/10	5	5	5	4	3	22	
4.	Rate analysis	27	CE71C 3	17/10	28/11	5	5	5	5	4	24	
			3									

CERTIFICATE

This is certify that Mr. / Miss. / Mrs. Ambure Snehal Shankar of Class T.Y. Division A Roll No 01 Semester VIIth has completed satisfactorily Experiments in Estimation, costing and valuation during the academic year 2023/24

Date :

Subject Teacher | Head of Dept. | Principal

INDEX

(Laboratory Book Assessment)

Sr. No.	Title of Experiment	Page No.	CO	Date of Expt.		Marks (25)					Total (25)	Sign.
				Performed	Submitted	Attendance (5)	Performance (5)	Submission (5)	Presentation (5)	Oral (5)		
1	pH value	1-3	1	22-8-23	22/11	5	5	5	5	4	24	
2	Total solids	5-6	1	26-9-23	22/11	5	4	5	5	5	24	
3	chloride content	7-8	1	3-10-23	22/11	5	5	5	4	3	22	
4	sulphate content	9-10	1	17-10-23	24/11	5	5	5	5	5	25	
5	BOD & DO	12-13	1	31-10-23	24/11	5	4	5	5	4	23	
6	COD	14-15	1	2-11-2023	24/11	5	4	5	5	4	23	
7	oil & grease.	16-18	1	14-11	11/12	5	5	5	5	4	24	
8	Demonstration of high volume samper	19-20	1	24-11	11/12	5	5	4	5	5	24	
9	Deterimination Auto Exhust Analyzer	21-22	1	24-11	11/12	5	5	4	5	5	24	

CERTIFICATE

This is certify that Mr. / Miss. / Mrs.....Dubule.....Pravin.....Sunil..... of Class ...TY..... Division ....B... Roll No ..22... Semester ....V.. has completed satisfactorily Experiments in .Environmental.....Engg.-II... during the academic year .2023-24

Date :

Subject Teacher

Head of Dept.

Principal

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Assessment of In Semester Examination (ISE)

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

In Semester Examination (ISE)

- Marking Scheme of Assessment
- Answer Sheet
- Circular for Timely Assessment
- Result

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

In Semester Examination (ISE)

- **Marking Scheme of Assessment**

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

In Semester Examination (ISE)

Answer Sheet

SVERI'S College of Engineering, Pandharpur

Department of Civil Engineering

T.Y. CIVIL UT-I Academic Year -2023-2024

Design of Concrete Structure-I

Div.: - A

Day and Date: 11/109/2023 **Marks - 20**

Time- **Duration-1 Hours**

CO	CO STATEMENT	Blooms Level	Max. Marks
CE55C.2	Design various types of slabs viz. One way slabs, two way slabs, cantilever slabs as per is code.	BL 4	20

Instructions - I) All questions are compulsory.

II) Assume suitable data if required.

Q. 1	MCQ'S/objectives type questions.	Marks	Related CO & Blooms Level	PI
1)	The Partial Safety factor for Concrete in limit state design is..... A) 0.87 B) 0.67 C) 1.15 D) 1.5	02	CE55C.2 & BL 2	PI:2.1.2
2)	The minimum reinforcement when tor steel is used is..... of gross area A) 0.12% B) 0.15% C) 0.18% D) 0.20%			PI:2.1.2
3)	In LSM the total area of the stress block is..... A)0.36 Fck Xu B)0.67 Fck Xu C)1.15 Fck Xu D)0.87 Fck xu	02	CE55C.2 & BL 2	PI:2.2.2,
4)	The ratio of ultimate load to the ..... is called as load factor A) Working Stress B) Ultimate Stress C)Ultimate Strain D)Working Load			PI:2.2.2,

Q. 2	Solve the Following			
1)	Design a Cantilever Balcony slab 1.2 m from a beam. Adopt a live load of 2.5 KN/Sq.M. Use M20 Concrete and Fe415 Steel	10	CE55C.2 & BL 4	PI:2.1.1, 3.1.1,2,3 & 3.2.1 & 3.3.1

Q. 3	Solve the following			
1)	Design a rectangular beam, continuous over three column supports with span 7m each. The beam is subjected to an imposed load of 12 kN/M and live load of 17 kN/M. Use M25 concrete and Fe500 steel.	06	CE55C.2 & BL 4	PI:2.1.1, 3.1.1,2,3 & 3.2.1 & 3.3.1

..... All the Best.....

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: UT-1
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.2	CE55C.2	CE55C.2	CE55C.2		
			Max. Marks	4	10	6			
			Q. No. / Total Obtained Marks	Q1	Q2	Q3	Max. Marks	Obtained Marks	% Marks
2.02101E+14	211CE11008	SAYLI VIJAY ASHTUL	20	4	10	6	20	20	100
2.02201E+14	221CE12003	AISHWARYA ROHIDAS CHAVAN	15	4	6	5	20	15	75.00
2.02101E+14	211CE11029	NAMRATA DINKAR CHAVARE	20	4	10	6	20	20	100
2.02101E+14	211CE11023	SANIKA GAJANAN DESHMUKHE	18	4	10	4	20	18	90.00
2.02101E+14	211CE11019	PRIYANKA PRATAP KARANDE	20	4	10	6	20	20	100
2.02101E+14	211CE11025	RUTUJA MAHESH KAWADE	10	4	6	0	20	10	50.00
2.02201E+14	221CE12022	PRIYANKA IRANNA KOLI	20	4	10	6	20	20	100
2.02101E+14	211CE11026	AISHWARYA PRADIP KUMBHAR	13	4	9	0	20	13	65.00
2.02101E+14	211CE11018	DIVYA RAJENDRA LATAKE	17	4	9	4	20	17	85.00
2.02101E+14	211CE11005	AAKANKSHA JAGANNATH MANE	20	4	10	6	20	20	100
2.02101E+14	211CE11012	POOJA DADASAHEB NAGANE	15	4	10	1	20	15	75.00
2.02101E+14	211CE11022	SNEHAL NAVNATH RONGE	19	4	9	6	20	19	95.00
2.02101E+14	211CE11010	ALVIRA AMIN SHAIKH	15	4	9	2	20	15	75.00
2.02101E+14	211CE11032	ANISHA AMAR SURVASE	17	4	10	3	20	17	85.00
2.02201E+14	221CE12038	SHIVALINGAMMA CHANDRAKANT TENGALE	14	4	10	0	20	14	70.00
2.02101E+14	211CE11001	BAPU SADASHIV ANUSE	10	4	6	0	20	10	50.00

2.02101E+14	211CE11004	AJAY BHAGWAT BANSODE	15	4	5	6	20	15	75.00
2.02101E+14	211CE11031	PRATHMESH LAXMAN CHAVAN	18	4	9	5	20	18	90.00
2.02101E+14	211CE11011	SWAPNIL MAHADEV DHULAGUDE	18	4	9	5	20	18	90.00
2.02201E+14	221CE12040	SAMARTH PRAKASH HIPPARGI	20	4	10	6	20	20	100
2.02101E+14	211CE11013	GOPAL DATTA MADANE	10	4	6	0	20	10	50.00
2.02201E+14	221CE12045	RAHUL MANAGENI MASHALE	20	4	10	6	20	20	100
2.02201E+14	221CE12015	AVINASH SHARANAPPA NILGAR	19	3	10	6	20	19	95.00
2.02201E+14	221CE12021	VIGHNAHAR SHARAD NILGAR	20	4	10	6	20	20	100
2.02201E+14	221CE12005	ABHISHEK SURESH NIMBAL	20	4	10	6	20	20	100
2.02201E+14	221CE12047	SURESH BHIMANNA SUNAGAR	20	4	10	6	20	20	100
2.02201E+14	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	19	3	10	6	20	19	95.00
2.02201E+14	221CE12039	SHRAVAN SURYAKANT WAGHAMODE	20	4	10	6	20	20	100

Number of Students: 28

Tool CO Attainment

Target Level(%): 60

Attainment Level
(Percentage of students scoring Marks >=60) = Level 1
(Percentage of students scoring Marks >=70) = Level 2
(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C.2
No. of Students achieving Target Level	25
No. of Applicable Students	28
% Students achieving Target Level	89.29
Attainment	3

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: 1 Date: 11/09/2022

Name of Student: Umbal Abhishek Jayesh

Class.: TY Division: A

Roll No.: 34 Subject:

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CE5CC2	2	2.1.2, 2.2.2	1	01	01	01	01			04
CE5CC2	4	2.1.2 3.1.2.4	2	10						10
CE5CC2	4	2.1.1 3.1.2.3 3.3.1	3	06						6
			4							
			5							
			6							
			7							
			8							
									Grand Total	20/20

Q1)

1) d)

2) a)

3) a)

4) d)

4

Q1) Design a cantilever balcony slab, 1.2 m from a beam. adopt a live load of 2.5 kN/sq.m, use M20 concrete and Fe 415 steel

⇒ L.L = 2.5 kN/sq.m & Fck = 20 N/mm2

FY = 415 N

width of support + wall 150 mm

step-1) Depth calculation

$\frac{span}{d} = 7 \times MF$

MF = ?

$F_s = 0.58 \times FY \times A_{st} \times \frac{required}{provided}$

$= 0.58 \times 415 \times 1$

$= 240.7$

$f_s = 240.7$, $p_t = 0.31$

MF = 1.45

$\frac{1200}{d} = 7 \times 1.45$

d = 118.22 mm

$$D = d + \frac{\phi}{2} + 15$$

$$= 118.22 + \frac{10}{2} + 15$$

$$= 138.22$$

$$D \cong 140 \text{ mm}$$

$$d = 120 \text{ mm}$$

step-2 calculate effective span -

$$\text{left} = \text{clear span} + \frac{d}{2}$$

$$= 1.2 + 0.\frac{120}{2}$$

$$\text{left} = 1.26 \text{ m}$$

steps - Load calculation -

① Assume 1m of width of span

① $DL = l \times b \times D \times \rho$

$= 0.14 \times 25$

$DL = 3.5 \text{ kN/m}$

② $L.L = 2.5 \text{ kN/m}$

③ Floor finish = 1 kN/m

Total load = L.L + DL + F.L

= 3.5 + 2.5 + 1

= 7 kN/m

Factored load = 1.5 × 7 = 10.5 kN/m

step 4) Bending moment calculation

$$BM = \frac{wu \times lee^2}{2}$$

$$= \frac{10.5 \times (1.26)^2}{2}$$

$$\boxed{BM = 8.33 \text{ kN·m}}$$

check for depth -

BM = MR

$8.33 \times 10^6 = 0.138 \times fck \times bd^2$

$8.33 \times 10^6 = 0.138 \times 20 \times 1000 \times d^2$

$\boxed{d = 54.93 \text{ mm}}$ → required

d provided = 140 mm

$\boxed{d_{required} = d_{provided}}$

Step-5 Calculation of steel requirment

$$A_{st} = \frac{0.5 \times f_{ck} \times bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} \times bd^2}}\right]$$

$$= \frac{0.5 \times 20 \times 1000 \times 120}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 8.33 \times 10^6}{20 \times 1000 \times 120^2}}\right]$$

$$\boxed{A_{st} = 199.22 \text{ mm}^2}$$

Assume ϕ, 10 mm diameter

calculate area of one bar $= \frac{\pi}{4} \times d^2$

$$= \frac{\pi}{4} \times 10^2$$

$$= 78.53 \text{ mm}^2$$

No. of bar $= \frac{A_{st}}{\text{area of single bar}}$

$$= \frac{199.22}{78.53}$$

$$= 2.53 \approx 3$$

A_{st} provided $= 3 \times 78.53$

$$\boxed{A_{st\,pro} = 235.59}$$

Actual present of steel :

$$p_t = 100 \times \frac{A_{st} \text{ provided}}{bd}$$

$= \frac{100 \times 235.59}{1000 \times 120}$

$p_t = 0.196$

* spacing calculation

① $\frac{\text{Area of single bar}}{\text{Ast provided}} \times \text{width}$

$= \frac{78.58}{235.59} \times 1000$

$= 333.33 \text{ mm}$

② $3d = 3 \times 120 = 360 \text{ mm}$

③ 300 mm

Adopt = 300 mm

* spa for dumbution steel

$= \frac{0.12}{100} \times \text{area} \times$

$= \frac{0.12}{1000} \times 1000 \times 120$

$= 168 \text{ mm}^2$

Ast dumbution = 168 mm^2

Assume 8 mm

Area of single bar = $\frac{\pi}{4} \times 8^2$

= 50.20 mm^2

No of bar = $\frac{A_{st}\ bar}{area\ of\ single\ bar}$

$= \frac{168}{50.26}$

$= 3.34 \approx 4$

A_{st} provided = 4×50.86

A_{st} provided = $201.04\ mm^2$

spacing calculation :-

① $\frac{\text{Area of single bar}}{A_{st}\ provided} \times 1000$

$= \frac{50.26}{201.04} \times 1000$

$= 250\ mm$

② $5d = 5 \times 120 = 600\ mm$

③ $450\ mm$

} adopt 250 mm

adopt 250 mm

77 Checks :-

① shear = $2v = \frac{V_u}{bd}$

No of bar = $\frac{\text{Ast bar}}{\text{area of single bar}}$

$= \frac{168}{50.26}$

$= 3.34 \cong 4$

Ast provided = 4×50.26

Ast provided = 201.04 mm²

spacing calculation:

① $\frac{\text{Area of single bar}}{\text{Ast provided}} \times 1000$

$= \frac{50.26}{201.04} \times 1000$

$= 250$ mm

② $5d = 5 \times 120 = 600$ mm

③ 450 mm

} adopt 250 mm

adopt 250 mm

77 Checks:

① shear = $\tau v = \frac{Vu}{bd}$

V_u = $w_u l_{eff}$

= 10.5×1.26

$V_u = 13.23$ kN

$\tau_v = \frac{13.23 \times 10^3}{1000 \times 120}$

$\tau_v = 0.11$ mpa pt. 0.196

from pg. No. 456 : 2000 for M25

0.15	→	0.28
0.19	→	?
0.25	→	0.36

$\tau_c = 0.312$

$\tau_v < \tau_c$ Hence ok

27 check for deflection :-

$F_s = 0.58 \times f_y \times \frac{A_{st} \text{ required}}{A_{st} \text{ provided}}$

$= 0.58 \times 415 \times \left(\frac{199.25}{295.59}\right)$

$= 203.57 = 190$ mm

from graph = MF = 2

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: _____ Date: _____

Name of Student.: _____

Class.: _____ Division.: _____

Roll No.: _____ Subject.: _____

Sign of Supervisor.: _____ Marks.: _____

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

$$\frac{\text{SFD}}{d} = 7 \times \text{MF}$$

$$\frac{1200}{d} = 7 \times 2$$

$$\boxed{d = 85.71}$$

$$D = 85.71 + \frac{10}{2} + 15$$

$$D = 105.71 \text{ mm} \cong 110 \text{ mm}$$

$$\boxed{D = 90 \text{ mm}}$$

$$\boxed{d_{req} < d_{provided}}$$

Development check

$$Ld = \frac{\phi \sigma_s}{4 \tau_{bd}}$$

$\phi = 10$, $\sigma_s = 0.87 \times f_y$

$= 0.87 \times 415$

$\sigma_s = 361.05$

$\tau_{bd} =$

for $m_{20} = 1.2$

$= 1.2 + \left(\frac{1.2}{100} \times 60\right)$

$= 1.2 + 0.6$

$\tau_{bd} = 1.92$

$$Ld = \frac{10 \times 361.05}{4 \times 1.92}$$

$Ld = 470.$ mm

$$M_1 = \frac{M_u}{2}$$

$$M_1 = \frac{8.33}{2}$$

$M_1 = 4.165$ kN·m

$V = 13.29$ kN

$$L.d = 1.3 \frac{M_1}{V} + L_0$$

(a) i) d = 100 mm

ii) ϕ = 10×12 = 120mm

adop = 120mm

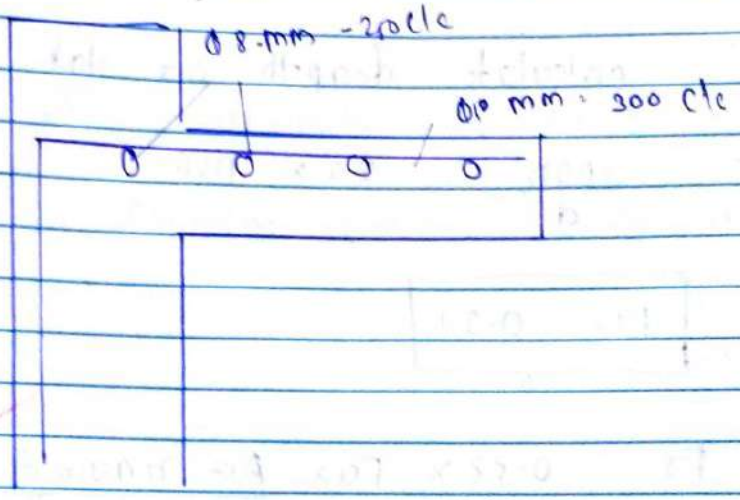
$$L_d = 1.3 \times \frac{M1}{V} + L_0$$

$$= 1.3 \times \frac{4165 \times 10^6}{13.23 \times 10^3} + 120$$

$$\boxed{L_d = 529.25 \text{ mm}}$$

Here 470 mm < 529.25 mm

Hence safe



Q.97

⇒ Slab size: 3 × 9 m, Brannry wall 230 mm

L.L = 3 kN/sqm, F.L = 1 kN/sqm

Fck = 20 N/mm², Fy = 415.

⇒ ratio of longer to shorter side

$= \frac{ly}{dx} = \frac{9}{3} = 3 > 2$

according to 456 : 2000
slab is one way.

step-1) calculate deapth of slab

$\frac{span}{d} = 20 \times MF$

$p_t = 0.31\%$

$F_s = 0.58 \times F_{ay} \times \frac{A_{st} \text{ required}}{A_{st} \text{ provided}}$

$= 0.58 \times 415 \times 1$

$= 240 \simeq 270$

$\frac{span}{d} = 20 \times 1.45$

$\frac{3000}{d} = 20 \times 1.45$

$d = 103.44 mm$

$D = d + \frac{\phi}{2} + 15$

$D = 103.44 + \frac{10}{2} + 15$

$D = 123.44 \approx 125 mm$

$D = 125 mm$

$d = 105 mm$

Step - III) calculate effective span

(1) effective span = c/c span + effective depth

= 3 + 0.105

= 3.105 m

(2) centre to centre length

$= 0.3 + \frac{0.23}{2} + \frac{0.23}{2}$

= 3.23 m

Step 4) calculate load

① Dead load = V × ρ

= 0.125 × 25

= 3.125 kN/m

② L.L = 3 kN/m

③ f.L = 1 kN/m

Total load = D.L + L.L + f.L

= 3.125 + 3 + 1

= 7.125 kN

Ultimate = 1.5 × 7.125

= 10.68 kN/m

Step 5) Bending moment

$$Mu = \frac{wl^2}{8} = \frac{wu \times lee^2}{8}$$

$$= \frac{10.68 \times (3.105)^2}{8}$$

= 12.87 kN·m

6) $A_{st} = \frac{0.5 \times f_{ck} \times bd}{f_y} \left[1 - \sqrt{1 - \frac{4.6 \times M_y}{f_{ck} \times bd^2}}\right]$

$= \frac{0.5 \times 20 \times 1000 \times 1052}{415} \left[1 - \sqrt{1 - \frac{4.6 \times 12.87 \times 10^6}{20 \times 1000 \times 1052}}\right]$

$A_{st} = 332.$ mm²

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: 1 Date: 11/9/2023

Name of Student: Bansode Ajay Bhagwat

Class.: TY - civil Division: A

Roll No.: 19 Subject: DCS I

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO5SC2	2	2112 2111	1	01	01	01	01			04
CO5SC2	4	2111	2	05						05
CO5SC2	4	3.11.23 3.2.1 3.3.1	3	06						06
			4							
			5							
			6							
			7							
			8							
									Grand Total	15/20

Q.1 MCQ

1) d)

2) a)

3) a)

4) d)

Q.3 given :

fck = 20

Fy = 415

dimention = 3m x 9m

L.L = 3 kN/sq

① ratio of $\frac{Ly}{Lx} = \frac{9}{3} = 3 > 2$

∴ Design a slab is oneway.

② Effective depth :

$\frac{span}{d} = 20$

$\frac{span}{d} = 20 \times$ modification factor (MF)

Assume pt=3 %

$f_s = 0.58 \times Fy$

$Fs = 0.58 \times 415$

$= 240.7 \cong 240$

page no. 38 IS 456 : 2000

modification factor = 1.45

$\frac{3000}{d} = 20 \times 1.45$

$d = 103.44 mm$

Assume c.c = 15 mm ϕ = 10 m

$D = d + cc + \frac{\phi}{2}$

$= 103.44 + 15 + \frac{10}{2}$

$D = 123.44$

$D \approx 125$ mm

$d = D - c.c - \frac{\phi}{2}$

$= 125 - 15 - \frac{10}{2}$

$d = 105$ mm

(3) calculation effective span :

(1) l_{eff} = clear span + effective depth

$= 3 + 0.105$

$= 3.105$ m

(2) l_{eff} = clear span + $\frac{\text{bearing}}{2}$ + $\frac{\text{bearing}}{2}$

$= 3 + \frac{0.23}{2} + \frac{0.23}{2}$

$l_{eff} = 3.105$ m

(4) load calculat^n :-

Assume 1 m width of slab

(1) D.L = Vol^m x ρ

$= D \times b \times l \times \rho$

$= 0.125 \times 25$

$= 3.125$ kN/m

② L.L $= 3$ kN/m^2

$= 3$ kN/m

③ Floor finish $= 1$ kN/m^2

F.L $= 1$ kN/m

* Total load $=$ D.L + L.L + F.L

$= 3.125 + 3 + 1$

$w = 7.125$ kN/m

* Ultimate load $= 1.5 \times w$

$= 1.5 \times 7.125$

$w_u = 10.68$ kN/m

⑤ Calculate bending moment :-

$$m_u = \frac{w_u \times l_{eff}^2}{8}$$

$$= \frac{10.68 \times 3.105^2}{8}$$

$$m_u = 12.87 \text{ kN.m}$$

(6) Steel requirement :

$$Ast = \frac{0.5 f_{ck} bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} bd^2}}\right]$$

$$\boxed{Ast = 366.14 \text{ mm}^2}$$

Assume $\phi = 10$ mm

area of single bar $= \frac{\pi}{4} \times d^2$

$= \frac{\pi}{4} \times 10^2$

$= 78.53 \text{ mm}^2$

No. of bars $= \frac{Ast \text{ req}}{\text{Area of single bar}}$

$= \frac{366.14}{78.53}$

$= 4.66 \approx 5$ Nos.

$Ast_{provide}$ = No. of bars × Area of single bar

$= 5 \times 78.53$

$\boxed{Ast_{provided} = 392.65 \text{ mm}^2}$

Actual percentage of steel

$$Pt = \frac{100 \times Ast\ provide}{b \times d}$$

$$= \frac{100 \times 392.65}{1000 \times 105}$$

$$\boxed{Pt = 0.37\%}$$

* spacing of bar.

(1) spacing $= \frac{\text{Area of single bar} \times \text{width}}{Ast\ provide}$

$$= \frac{78.53}{392.65} \times 1000$$

$$= 200\ mm$$

(2) $3 \times d = 3 \times 105 = 315$

(3) 300

provide 10mm ϕ bars at 200mm centre to centre along shorter span of slab. as main steel.

* ~~Distribution~~ steel :-

Ast Distribution $= \frac{0.12}{100} \times b \times D$

$= \frac{0.12}{100} \times 1000 \times 125$

Ast req $= 150\ mm^2$

Assume $\phi = 8\ mm$

Area of single bar $= 50.26\ mm^2$

No. of bars $= \frac{\text{Ast req}}{\text{Area of single bar}}$

$= \frac{150}{50.26}$

$= 2.98 \simeq 3$ Nos

Ast provid = no. of bars $\times$ Area of single bar

$= 3 \times 50.26$

Ast provd. $= 150.78\ mm^2$

* spacing :-

(1) $\frac{\text{Area of single bar}}{\text{Ast provide}} \times \text{width}$

$= \frac{50.26}{150.78} \times 1000$

$= 333.33 \text{ mm}$

$\simeq 330 \text{ mm}$

(2) $3 \times d = 3 \times 105 = 525 \text{ mm}$

(3) 450

∴ provide 8mm ϕ bars at 330 centre to centre as a distribution steel.

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: 1 Date:

Name of Student: Bansode Ajay Bhagwat

Class.: ty - civil Division: A

Roll No.: 19 Subject: DCS

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

Q.2 Given

$L = 1.2$ m

$L.L = 2.5$ N/m^2

$fck = 20$

$fy = 415$

① depth cal^n :

$$\frac{span}{d} = 7 \times mf$$

$$\frac{1250}{d} = 7 \times 1.45$$

$$d = 123.22 \text{ mm}$$

Assume c.c = 15mm ϕ = 10mm

$D = d + cc + \frac{\phi}{2}$

$= 118.22 + 15 + \frac{10}{2}$

$D = 143.15$ $D = 138.22$

$D \cong 145$ $D \cong 140$

$d = 140 - 20$

$d = 120$

② Cal^n effective length:

$l_{eff} = \text{clear span} + \frac{d}{2}$

$= 1.25 + \frac{0.120}{2}$

$l_{eff} = 1.26\ m$

③ load cal^n:

Assume 1m width of slab

① D.L $= A \times b \times D \times \rho$

$= 1 \times 1 \times 0.14 \times 25$

$= 3.5\ kN/m$

(2) L.L = 2.5 kN/m²
= 2.5 kN/m

(3) F.L = Assume F.L is 1 kN
= 1 kN/m

Total load = DL + LL + F.L
= 3.5 + 2.5 + 1
= 7 kN/m

Ultimate load = 1.5 × w
= 1.5 × 7
w = 10.5 kN/m

(4) Find bending Mu :-

$$M_u = \frac{w_1 \cdot l_{eff}^2}{2}$$

$$= \frac{10.5 \times 1.26^2}{2}$$

$$M_u = 8.33 \text{ kN.m}$$

* Check for depth

$B_m = mR$

$8.33 \times 10^6 = 0.138 \times 20 \times 1000 \times d^2$

$$\boxed{d = 54.99 \text{ mm}}$$

dreqund < dprovid

hence safe.

(5) calculate steel required:

$$A_{st} = \frac{0.5 f_{ck} bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} b d^2}}\right]$$

$$= \frac{0.5 \times 20 \times 1000 \times 120}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 8.33 \times 10^6}{20 \times 1000 \times 120^2}}\right]$$

$$\boxed{A_{st\,req} = 199.22 \text{ mm}^2}$$

* Area of single bar $= \frac{\pi}{4} \times d^2$

$= \frac{\pi}{4} \times 10^2$

$= 78.54 \text{ mm}^2$

* No. of bar = Ast / Ast of single bar

= 199.22 / 78.54

= 2.53 ≈ 3 Nos.

Ast provide = Area of single bar × No. of bar

= 78.54 × 3

Ast provide = 235.59 mm²

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: 1 Date: 11/9/2023

Name of Student: Aishwarya Pradip kumbhar

Class: T.Y. B. Tech Division: A

Roll No.: 09 Subject: DCS.

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC2	2	2.1.2 2.2.2	1	1	1	1	1			4
CESSC2	4	2.1.2, 3.1.1 3.2.1	2	09						09
CESSC2	4	2.1.1, 3.1.1 3.2.1	3	0						0
			4							
			5							
			6							
			7							
			8							
									Grand Total	13/20

Q.1.

1) d)

2) d)

3) a)

4) d)

Q.2 Design a cantilver Balcony slab 1.2m from a beam, Adopt a live load of 2.5 KN/Sqm. Use m_{20} concrete and fe415 steel.

→ Given

L.L = 2.5 KN/Sq.m

span = 1.2m. = 1200 width = 120

f_{ck} = 20mpa

F_y = 415 mpa

Step 1

Depth cal. = $\frac{\text{span}}{d}$ = 7 x mf

$f_s = 0.58 f_y \times 1$

$= 0.58 \times 415 \times 1$

$\boxed{f_s = 240.7}$

assume p_t = 0.3%

m.f. = 1.45

$\frac{1.2}{d} = 7 \times 1.45$

$\frac{1200}{7 \times 1.45} = d$

$\boxed{d = 118.22 \text{ mm}}$

D = ?

Assume cc = 15 mm

ϕ = 10 mm

$D = d + \frac{\phi}{2} + cc$

$= 118.22 + \frac{10}{2} + 15$

$= 118.22 + 20$

$\boxed{D = 138.22 \text{ mm}} \approx 140 \text{ mm}$

$d = 140 - \frac{10}{2} - 15$

$= 145 - 20$

$d = 120\ mm$

Step 2 calculation of eff. span

eff = clear span + $\frac{d}{2}$

$= 1200 + \frac{0.120}{2}$

$eff = 1.26\ m$

Step 3 load calculation

Assume 1m width of span

1) $DL = l \times b \times D \times \rho$

$= 0.140 \times 25$

$DL = 3.5\ KN/m$ — (1)

2) $LL = 2500\ N/m^2$

$LL = 2.5\ KN/m$ — (2)

floor finish

Assume floor finish as $1\ KN/m^2$

$FF = 1\ KN/m^2$ — (3)

Total load = DL + LL + FF

$= 3.5 + 2.5 + 1$

$TL = 7\ KN/m$

$Wu = fos \times w = 1.5 \times 7$

$Wu = 10.5\ KN/m$

Step 4

B.M calculation

$B.M = \frac{Wu\ l^2\ eff}{2}$

$= \frac{10.5 \times (1.26)^2}{2}$

$B.M = 8.834\ KN.m$

check for depth

B.M. = M.R

~~9.813 x 10^6~~

$9.334 \times 10^6 = 0.138 \times fck \times bd^2$

$9.334 \times 10^6 = 0.138 \times 20 \times 1000 \times d^2$

$$d = \sqrt{\frac{9.334 \times 10^6}{0.138 \times 20 \times 1000}}$$

$$\boxed{d = 54.95 \text{ mm}}$$

$d_{req} = 54.95$ mm

$d_{prov} = 118.22$ mm

$d_{req} < d_{provi}$

Steps steel calculation

$$A_{st} = \frac{0.15 f_{ck} bd}{f_y}\left(1 - \frac{4.6 m_y}{f_{ck} \times bd^2}\right)$$

$$= \frac{0.15 \times 20 \times 1000 \times 120}{415}\left(\frac{1 - 4.6 \times 9.813 \times 10^6}{20 \times 1000 \times (120)^2}\right)$$

$$= 144.57 \times -0.156$$

$$\boxed{A_{st} = 199.32 \text{ mm}^2}$$

~~No. of bars = 199.32~~

Area of single bar $= \frac{\pi}{4} d^2$

$$= \frac{\pi}{4} \times 10^2$$

$$\boxed{A = 78.53 \text{ mm}^2}$$

~~Ast~~ No. of bars $= \frac{199.32}{78.53}$

No. of bars = 2.53 ≅ 3 bars

Ast provided = No. of bars × Area of single bar
= 3 × 78.53

Astprov = 235.59 mm²

$$Pt = \frac{100 \times Ast\ Prov}{bd}$$

$$= \frac{100 \times 235.59}{1000 \times 120}$$

Pt = 0.19

spacing calculation = $\frac{\text{Area of single bar} \times 1000}{\text{Ast Pro}}$

$$= \frac{78.53}{235.59} \times 1000$$

= 333.33 mm ——— (1)

2) 3d

3 × 120 = 360 mm ——— (2)

3) 300 mm

Adopt 300 mm

for distribution steel

0.12% Area

$$= \frac{0.12}{100} \times 100 \times 140$$

Ast distribution = 168 mm²

Assume ϕ 8mm

Area of single bar = $\frac{\pi}{4} \times \phi^2$

$$= \frac{\pi}{4} \times 8^2$$

$$A = 50.26 \text{ mm}^2$$

$$\text{no. of bar} = \frac{\text{Ast dist}}{\text{Area of single bar}}$$

$$= \frac{168\ 174}{50.26}$$

$$= \text{or} \rightarrow 3.46 \cong 4 \text{ nos}$$

Ast Provided = no. of bar x Area of single bar

$= 4 \times 50.26$

$= 201.04 \text{ mm}^2$

1) $\frac{\text{Area of single bar} \times 1000}{\text{Ast dist}}$

$= \frac{50.26}{201.04} \times 1000$

$= 250 \text{ mm}$

2) $5d = 5 \times 120 = 600 \text{ mm}$

3) 450 mm

Provide 8mm bar at 250mm center to center.

Step 7

shear

$$\tau_v = \frac{V_u}{bd}$$

$V_u = \omega_u l_{eff}$

$= 10.5 \times 1.26$

$V_u = 13.23 \text{ KN}.$

$$\tau_v = \frac{13.23}{1000 \times 120}$$

$$\boxed{\tau_v = 1.104}$$

$\tau_c = ?$

$Pt = 0.18$

Pt support $= 0.18$

from table no. 19 IS 456 : 2000

M20

0.15	0.28
0.18	?
0.25	0.36

$$\boxed{\tau = 0.304}$$

Deflection

$$FS = 0.58 \times f_u \times \frac{A_{st\ req}}{A_{st\ prov}}$$

$$= 0.58 \times 415 \times \frac{199.32}{235.59}$$

$$= 240.7 \times 0.84$$

$$\boxed{FS = \cancel{20.21} \simeq 203.64 \simeq \cancel{1980.5}}$$

m.f = ~~18~~ 2

$$\frac{span}{d} = 7 \times m.f$$

$$\frac{1200}{d} = 7 \times 2$$

$$\frac{1200}{7 \times 2} = d$$

$$\boxed{d = 85.71}$$

$$D = 85.71 + \frac{10}{2} + 15$$

$$D = 105.71 \cong 100\,mm$$

$$d = 110 - \frac{10}{2} - 15$$

$$\boxed{d = 90\,mm}$$

$$d_{req} = 90\,mm$$

$$d_{prov} = 125\,mm$$

$$d_{req} < d_{provid}$$

Development check

$$L_d = \frac{\phi 65}{4 \tau_{bd}}$$

$$\phi = 10$$

$$6_s = 0.87 \times 415$$

$$= 361.05$$

τ_{bd} =

for $m_{20} = 1.2$

$$\tau_{bd} = 1.6 \times 1.2$$

$$= 1.92$$

$$L_d = \frac{10 \times 361.05}{4 \times 1.92}$$

$$\boxed{L_d = 470\,mm}$$

$$m_1 = \frac{m_4}{2}$$

$$= \frac{9.81}{2}$$

$$= 4.91$$

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: _____ Date: _____

Name of Student: _____

Class: _____ Division: A

Roll No.: 09 Subject: DCS

Sign of Supervisor: _____ Marks: _____

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

$V = 15,001$

$L_0 = 1) d = 120$

$2) 12 \times 10 = 12 \times 10$

$= 120$

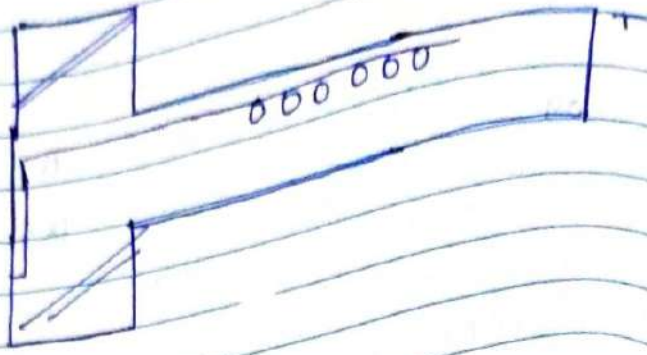
Adopt $= 125$

$= 1.3 \frac{m_1}{V} + L_0$

$= 1.3 + \frac{499 \times 10^6}{15,001 \times 103} + 125$

$= 550.93 \text{ mm}$

$L_d < 1.3 \left(\frac{m_1}{V}\right) + L_0$



Q.3 Given

SVERI'S College of Engineering, Pandharpur

Department of Civil Engineering

T.Y. CIVIL UT-II Academic Year -2023-2024

Design of Concrete Structure-I

Div.: - A

Day and Date: 17/10/2023 **Marks - 20**

Time- **Duration-1 Hours**

CO	CO STATEMENT	Blooms Level	Max. Marks
CE55C.4	Analyze & design of T-beams, L-beams as per IS code	BL 4	20

Instructions - I) All questions are compulsory.

II) Assume suitable data if required.

Q. 1	MCQ'S/objectives type questions.	Marks	Related CO & Blooms Level	PI
1)	Effective width in L beam is _____ A) (l0/6) + bw + 6 Df B) (l0/12) + bw + 6Df C) (l0/12) + 3bw + Df D) (l0/12) + bw + 3 Df	01	CE55C.4 & BL 2	PI:2.1.2
2)	An intermediate T-beam reinforced with two layers of tensile steel with clear cover 13 cm encased with the floor of a hall 12 meters by 7 meters, is spaced at 3 meters from adjoining beams and if the width of the beam is 20 cm, the breadth of the flange is..... A) 123 B) 430 C) 233 D) 176	01		PI:2.1.2
3)	A reinforced concrete beam with rectangular cross-section (width = 300 mm, effective depth = 580 mm) is made of M30 grade concrete. It has 1% longitudinal tension reinforcement of Fe 415 grade steel. The design shear strength for this beam is 0.66 N/mm2 . The beam has to resist a factored shear force of 440 kN. The spacing of twolegged, 10 mm diameter vertical stirrups of Fe 415 grade steel is _____mm. (round off to the nearest integer) A) 100 B) 1000 C) 399 D) 567	02		PI:2.2.2,

Q. 3	Solve the Following			
1)	A T-beam of Flange width 850 mm flange thickness 10 mm rib width 275 mm has an effective depth of 475 mm The beam is reinforced with 4 bars of 20 mm dai. Find the ultimate moment of resistance. Use M20 And Fe 415	08	CE55C.3 & BL 4	PI:2.1.1, 3.1.1,2,3 & 3.2.1 & 3.3.1

Q. 4	Solve the following (Any 1)			
1)	T-beam slab Floor has 150 mm thick slab forming part of T beam which are of 10 m clear span .The end bearing are 300 mm thick the spacing of T beam is 3.2 m.The live load on the floor is 4 KN/Sq.m (including floor finish). Design one of the T-beam using M25 & Fe500	08	CE55C.4 & BL 4	PI:2.1.1, 3.1.1,2,3 & 3.2.1 & 3.3.1

.....All the Best.....

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: UT-2
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.4	CE55C.4	CE55C.4	CE55C.4		
			Max. Marks	4	8	8			
			Q. No. / Total Obtained Marks	Q1	Q2	Q3	Max. Marks	Obtained Marks	% Marks
2.02101E+14	211CE11008	SAYLI VIJAY ASHTUL	20	4	8	8	20	20	100
2.02201E+14	221CE12003	AISHWARYA ROHIDAS CHAVAN	15	1	8	6	20	15	75.00
2.02201E+14	221CE12024	KAJAL SHRAVAN KAMBLE	20	4	8	8	20	20	100
2.02101E+14	211CE11019	PRIYANKA PRATAP KARANDE	19	4	8	7	20	19	95.00
2.02201E+14	221CE12022	PRIYANKA IRANNA KOLI	20	4	8	8	20	20	100
2.02101E+14	211CE11005	AAKANKSHA JAGANNATH MANE	20	4	8	8	20	20	100
2.02101E+14	211CE11012	POOJA DADASAHEB NAGANE	19	4	8	7	20	19	95.00
2.02101E+14	211CE11022	SNEHAL NAVNATH RONGE	19	4	8	7	20	19	95.00
2.02101E+14	211CE11032	ANISHA AMAR SURVASE	19	4	8	7	20	19	95.00
2.02201E+14	221CE12038	SHIVALINGAMMA CHANDRAKANT TENGALE	20	4	8	8	20	20	100
2.02101E+14	211CE11004	AJAY BHAGWAT BANSODE	15	4	8	3	20	15	75.00
2.02101E+14	211CE11031	PRATHMESH LAXMAN CHAVAN	19	4	8	7	20	19	95.00
2.02101E+14	211CE11030	SWARUP RAJARAM CHAVAN	19	4	8	7	20	19	95.00
2.02101E+14	211CE11011	SWAPNIL MAHADEV DHULAGUDE	17	4	8	5	20	17	85.00
2.02201E+14	221CE12040	SAMARTH PRAKASH HIPPARGI	20	4	8	8	20	20	100

2.02101E+14	211CE11021	VITTHAL SAINATH HOTKAR	17	2	8	7	20	17	85.00
2.02101E+14	211CE11017	PRATIK DADA KARE	18	4	8	6	20	18	90.00
2.02201E+14	221CE12035	SANKET CHANDRAKANT LENDAVE	17	4	8	5	20	17	85.00
2.02101E+14	211CE11013	GOPAL DATTA MADANE	12	4	8	0	20	12	60.00
2.02201E+14	221CE12045	RAHUL MANAGENI MASHALE	19	4	8	7	20	19	95.00
2.02201E+14	221CE12015	AVINASH SHARANAPPA NILGAR	20	4	8	8	20	20	100
2.02201E+14	221CE12021	VIGHNAHAR SHARAD NILGAR	20	4	8	8	20	20	100
2.02201E+14	221CE12005	ABHISHEK SURESH NIMBAL	20	4	8	8	20	20	100
2.02101E+14	211CE11015	RAJ MOHAN RONGE	18	4	8	6	20	18	90.00
2.02101E+14	211CE11002	AKASH SUBHASH SHEGAR	20	4	8	8	20	20	100
2.02201E+14	221CE12047	SURESH BHIMANNA SUNAGAR	19	4	8	7	20	19	95.00
2.02201E+14	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	20	4	8	8	20	20	100
2.02201E+14	221CE12039	SHRAVAN SURYAKANT WAGHAMODE	19	4	8	7	20	19	95.00

Number of Students: 28

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C4
No. of Students achieving Target Level	28
No. of Applicable Students	28
% Students achieving Target Level	100
Attainment	3

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: II Date: 17/10/23

Name of Student: Priyanka Iranna Koli

Class: TYCE Division: A

Roll No.: 08 Subject: DSC - I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC.4	2	2.1.1	1	1	1	2				4
CESSC.4	3	2.1.2 2.1.3	2	08						08
CESSC.4	3	3.1.1 3.1.2	3	08						08
			4							
			5							
			6							
			7							
			8							
									Grand Total	20/20

Q. 1

1)

→ d)

2)

→ d)

3)

→ a)

4)

Q.2 A T beam of flange width 850mm Flange thickness 100mm rib width 275mm has an effective depth of 475mm the beam is reinforced with 4-20mm dia Find the ultimate moment of resistance use M20 & Fe 415.

→

$b_f = 850\ mm$

$D_f = 100\ mm$

$b_w = 275\ mm$

$f_y = 415$

$f_{ck} = 20$

① $A_{st} = 4 - 20\ mm$

$= 4 \times \frac{\pi}{4} \times 20^2$

$= 1256.63$

$b_f = 850\ mm$

Assume NA passing through Flange

$x_u < D_f$

$C_u = T_u$

$0.36\ f_{ck}\ b_f\ x_u = 0.87\ f_y\ A_{st}$

$0.36 \times 20 \times 850 \times x_u = 0.87 \times 415 \times 1256.63$

$x_u = \frac{0.87 \times 415 \times 1256.63}{0.36 \times 20 \times 850}$

$x_u = 74.13$

DF = 100

$x_u < 100$

$74.13 < 100$

Hence OK

$\frac{x_{umax}}{d} = 0.48$

$x_{umax} = 0.48 \times 475$

$x_{umax} = 228.$

DF = 100.

$x_u < x_{umax}.$

$M_u = T_u \times Z_u$

$= 0.87 f_y A_{st} (d - 0.42 x_u)$

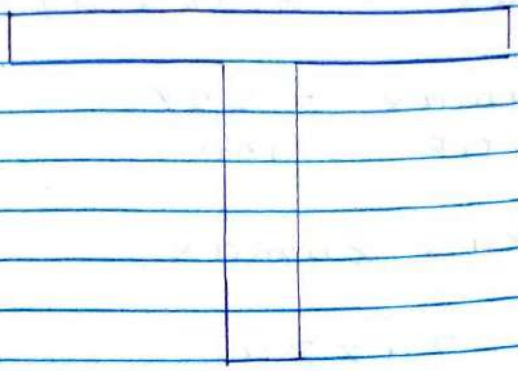
$= 0.87 \times 415 \times 1256.63 (475 - 0.42 \times 74.13)$

$M_u = 201.88$ KNm.

$M_u = \frac{wl^2}{8}$

20+.

Q.3 T beam slab floor has 150 mm thick slab forming part of T beam which are of 10m clear span the end beams are 300 mm thick spacing of T beam is 3.2 m the live load on the floor is 4KN/m² (including floor finish) design one of the T beam using M25 concrete Fe 500 steel



→ Given :-

d_F = 150 mm.
L_0 = 10 mm
W = 300 mm.
L.L = 4KN/m²
b_w = 230 mm - assume
Fck = 25
Fy = 500.

① $\frac{span}{d} = 10$

$\frac{10000}{d} = 10$

d = 1000 mm.

Assume effective cover 50 mm.

D = d + eff. cover
= 1000 + 50
= 1050 mm

② Effective span.

① clear span + d

= 10000 + 1000

= 11000 mm — ⓐ 11 m — ①

② clear span + $\frac{300}{2}$ + $\frac{300}{2}$

= 10000 + 300

= 10300 mm

= 10.3 m. — ② Adopt

③ Load calculation

① DL

i) Flange = 3.2 × 0.150 × 25

= 12 KN/m.

ii) Web = 0.9 × 0.23 × 25

= 5.175 KN/m

② LL = 4 × 3.2

= 12.8 KN/m

Total load = 12 + 5.175 + 12.8

= 29.97 KN/m

Wu = 1.5 × 29.97

= 44.96 KN/m

$b_f = \frac{l_0}{6} + b_w + 6D_f$

$= \frac{10000}{6} + 230 + 6 \times 150$

= 2796.66 ≅ 2800

2.80 < 3.2

④ BM = ?

$$Mu = \frac{wl^2}{8} = \frac{44.96 \times (10.99)^2}{8}$$

$$= 596.22 \text{ KN m}$$

$$Mulim = 0.446 Fck\, bF \times DF \times \left(d - \frac{DF}{2}\right)$$

$$= 0.446 \times 25 \times 2800 \times 150 \times \left(1000 - \frac{150}{2}\right)$$

$$= 4.93 \times 10^9$$

$$= 4931.77 \times 10^6 \text{ KN mm}$$

$$= 4931.77 \text{ KN m}$$

$Mu = 596.22$ KN m

$Mulim = 4931.77$ KN m

$Mu < Mulim$.

design beam as singly reinFor-ced section.

⑤ steel calculation.

$$Ast = \frac{0.5 Fck\, b\, d}{Fy}\left[1 - \sqrt{1 - \frac{4.6\, Mu}{Fck\, b\, d^2}}\right]$$

$$= \frac{0.5 \times 25 \times 230 \times 1000}{500}\left[1 - \sqrt{1 - \frac{4.6 \times 596.22 \times 10^6}{25 \times 230 \times 1000^2}}\right]$$

$$= 1591.6 \text{ mm}^2$$

assume 25 mm ϕ.

area of single bar $= \frac{\pi}{4} \times 25^2$

$= 490.87$

NO. OF bar = $\frac{Ast}{\text{Area of single bar}}$

$= \frac{1591.6}{490.87}$

$= 3.24 \simeq 4$ NOS.

Ast provided = NO. OF bar x area OF single bar

$= 4 \times 490.87$

$= 1963.49 \, mm^3$

% OF steel = $100 \frac{Ast \text{ provided}}{bd}$

$= \frac{100 \times 1963.49}{230 \times 1000}$

$= 0.85\%$

provide 4 bars OF 25 mm dia as a tensile steel & 2 bars OF

(8) checks.

1) shear

$\tau_v = \frac{v_u}{bd}$

$v_u = \frac{W_u l_{eff}^2}{2}$

$= \frac{44.96 \times 10.3^2}{2}$

$= 231.49 \, kN$

$\tau v = \frac{231.49}{230 \times 1000}$

$= 1.006 \times 10^{-3}$

$= 1$ MPa.

τc

P at support $= \frac{0.85}{2} = 0.425$.

0.25	—	0.36
0.42	—	?
0.50	—	0.49

$\tau c = 0.448$ MPa

$\tau v > \tau c$

- Hence shear reinforced is required.

To calculate unbalance shear,

$Vus = (\tau v - \tau c)\, bd.$

$= (1 - 0.448) \times 230 \times 1000$

$= 126.96$ KN.

Assume 2 legged stirups at 8 mm ϕ.

$ASV = 2 \times \frac{\pi}{4} \times 8^2$

$= 100.53$ mm^2

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No. _____ Date _____

Name of Student _____

Class _____ Division _____

Roll No. _____ Subject _____

Sign of Supervisor _____ Marks _____

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

Spacing

① $V_{us} = \frac{0.87 F_y A_{sv} d}{S_v}$

$S_v = \frac{0.87 \times 500 \times 100.53 \times 1000}{126.96}$

$= 344.44 \cong 340$ mm

② $0.75 \times d = 0.75 \times 1000$
$= 750$ mm

③ 300 mm

provide 2 legged stirups of 8mm dia @ 300 mm dia. center to center reinforcement

(5) Deflection

$$FS = 0.58 \times Fu \times \frac{Ast\ req}{Ast\ pro}$$

$$= 0.58 \times 500 \times \frac{1591.6}{1963.49}$$

$$= 235.07\ MPa$$

$pt = 0.85$

from Fig.

MF = 1.

$$\frac{span}{d} = 20 \times MF$$

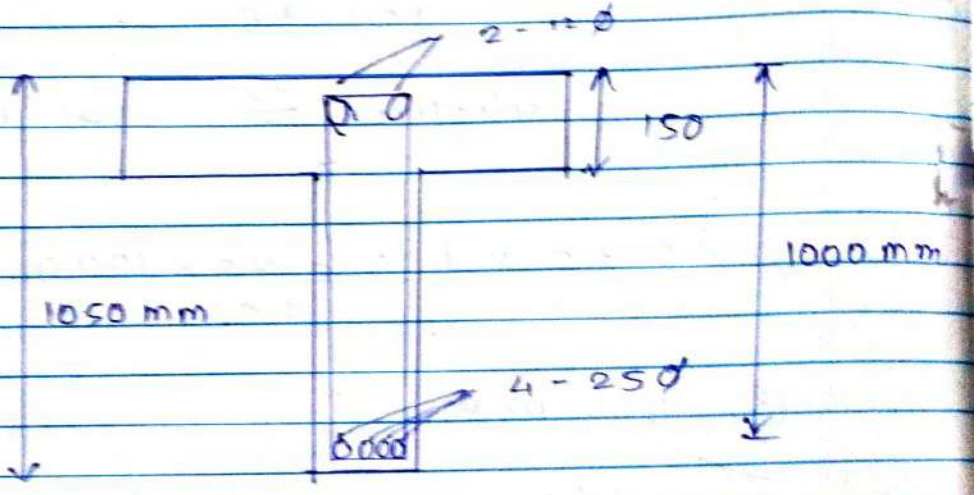
$$\frac{10000}{d} = 20 \times 1$$

$d_{req} = 500\ mm$

$d_{pro} = 1000\ mm$.

$d_{req} < d_{pro}$.

- Hence safe.



Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: UT - II Date: 17/10/03

Name of Student: Charan Aishwary Rohidas

Class: TYCE Division: A

Roll No.: 02 Subject: DCS

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO5504	2	2.1.1	1	1	0	0				1
CO5C1.4	3	2.1.2 2.1.3	2	08						08
CO5C1.4	3	3.1.1 3.1.2	3	06						06
			4							
			5							
			6							
			7							
			8							
									Grand Total	15/10

1) d)

1 + 2) c)

0 + 3) b)

1

D_f = 850 mm

b_w = 100 mm.

b_e = 275 mm

d' = 475 mm.

Ast = 4 bars of 20 mm

f_y = 415

f_{ck} = 20

Step 1. Ast = 4 − 20 mm.

$= 4 \times \frac{\pi}{4} \times 20^2$

$= 1256.63 \text{ mm}^2$

Step 2. $b_f = ?$

b_f = 850

step 3. Assume N.A passing through flange

$d_u < D_f$

$C_u = T_u$.

$0.36 f_{ck} b_f x_u = 0.87 \times f_y A_{st}$

$x_u = \frac{0.87 \times 415 \times 1256.63}{0.36 \times 20 \times 850}$

$x_u = 74.13$

$D_f = 850$.

x_u 74.13 $\leq$.

$74.13 < 100$.

Our assumption is wrong

Therefore,

Assume NA passing through web

$x_u > D_f$ & $D_f \leq 0.43 x_u$

$C_u = T_u$

0.36

$x_{umax} = 0.48 \times 475$

$= 228$

$D_f = x_u < x_{umax}$

$M_u = T_u \times Z_u$

$= 0.87 f_y A_{st} (d - 0.42 x_u)$

$= 0.87 \times 415 \times 1256.63 (475 - 0.42 \times 74.13)$

$M_u = 201.38$ kN.m

Given

$t = 150\,mm$

$LD = CC$

width = 300 mm

Sp 3.2 m.

$LL = 4\,kN/m^2$

FF = .

fy = 25

fe = 500.

Assume effective cover 50 mm.

D = d + effective cover

= 3.2 + 50

=

= 400 mm

② effective span

① clean span + d.

$3200 + \frac{300}{2} + \frac{300}{2}$

= 3500. — ②.

= 3.500 — ②.

Load calculations.

① DL.

① flange = 3.5 × 0.150 × 25

= .12

② web = 0.725 × 0.300 × 25

5.4375 kN/m

LL = LL x span

= 4 x span

= 2 x 3.2

= 12.8 kN/m.

③ ff = 1 kN/m² x span

= 1 kN x 3.2

= 3.2

total load = 12 + 5.43 + 12.8 + 3.2

= 33.43 kN/m

wu = 1.5 x 33.43

= 50.145 kN/m.

bf calculation

$$bf = \frac{lo}{6} + bw + 6 \times Df$$

$$= \frac{3.200}{6} + 300 + 6 \times 150 \text{ mm}$$

= ..

B.M

$$mu = \frac{wl^2}{8} = \frac{44.96 \times (10.3)^2}{8}$$

$$596.22$$

$$mulim = 0.446\, fck\, bf \times Df \times \left(d - \frac{Df}{2}\right)$$

$$= 0.446 \times 20 \times 2800 \times 120 \left(1000 - \frac{200}{2}\right)$$

$$= 4.33 \times 10^6 \text{ kN.mm}$$

$$= 4331 \cdot \text{kN} \cdot \text{m}$$

mulim 4331 kN.m

$mu = 596.22$ kN.m

$mulim = 4331$ kN.m

$mu \leq mulim$

Steel calculation

$$Ast = \frac{0.5\, fck\, bd}{fy}\left[1 - \sqrt{1 - \frac{4.6\, mu}{fck\, bd^2}}\right]$$

$$= \frac{0.5 \times 20 \times 230 \times 1000}{500}\left[1 - \sqrt{1 - \frac{4.6 \times 596.22 \times 10^6}{20 \times 230 \times 1000}}\right]$$

$Ast = 1591.25\ mm^2$

Assume 25 mm ϕ

No. of single bar $= \frac{Ast}{\text{Area of single bar}}$

$= 1591.25 \text{ mm}^2$

$\frac{\pi}{4}(25)^2$

$= 3.24 \simeq 4.$

Ast prov. $= 4 \times \frac{\pi}{4} \times 25^2$

$= 19.63.49 \text{ mm}^2$

% of steel $= \frac{100 \text{ Ast provided}}{bd}$

$= 100 \times 1591.25$

$= \frac{100 \times 1963.49}{230 \times 1000}$

$= 0.853\%$

Provide 4 bars of 25 mm dia of a tensile steel

4 2 bars of 12 mm diameter as a nominal steel in compressive zone

(b) check.

$\tau_u = \frac{V_u}{bd}$

$V_u = \frac{wl}{2} = \frac{44.96 \times (10.3)}{2} = 231.544.$

$\tau_v = \frac{V_u}{bd} = \frac{231.54}{230 \times 100} \quad 1.00 \times 10^{-3} \text{ mpa}$

Assumption $\frac{P_t}{2} = \frac{1.00 \times 10^3}{2} = 0.5$ %

0.25 — 0.36
0.42 — ?
0.50 — 0.49

$\tau_c = 0.4515$ mpa

τ_v & τ_c

$V_{us} = (\tau_v - \tau_c) bd$

$= (1 - 0.4515) \times 230 \times 1000$

$= 126.155$

Assume - 2 legged stirrups of 8 ϕ

$A_{sv} = 2 \times \frac{\pi}{4} \times 8^2$

$= 100.53 \text{ mm}^2$

$V_{us} = \frac{0.87 f_y A_{sv} d}{sv}$

$sv = \frac{0.87 \times 500 \times 100.53 \times 1000}{126.155}$

$346.624 \times 10^3 \leq 300$ mm

(a) 0.75 d
$= 0.75 \times 1000$
$= 750$ — (2)

(ii) 300mm

Provide 8 mm

Provide 2 legged Stirrups of 8mm ϕ @ 300 mm as a provide center to Center RIf as a shear RIf

checks deflection

$$fs = 0.58 \times 500 \times \frac{1000}{2800} \quad \frac{1591.25}{1963.99}$$

$fs = 234.98$

$Pt = 1.00$

$mf = ?$

from fig. 4

$mf = 1.3$

$$\frac{Span}{d} = 20 \times 1.3$$

$$= \frac{10000}{20 \times 1.3}$$

$d = 10000$ $\quad d_{req} = 1000$

$d = 2800$ $\quad d_{prov} = 384.61$

$d_{req} < d_{provided}$

Hence Safe

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: 02 Date: 17/10/23

Name of Student: Madane Gopal Dutta

Class: T.Y. Civil - A Division: A

Roll No.: 29 Subject: DCS-I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CVSSC.4	2	2.1.1	1	1	1	2				4
CVSSC.4	3	2.1.2 2.1.3	2	08						08
CVSSC.4	3	3.1.1 3.1.2	3	0						0
			4							
			5							
			6							
			7							
			8							
									Grand Total	12/20

Q.1] MCQ

⇒ (i) (d)

⇒ (2) (d)

(3)

⇒ (a)

Q.2] A T-beam of flange width 850 mm, flange thick. 100mm, rib width 275mm has an effective depth of 475 mm the beam is reinforced with 4-bar-20mm ϕ Find the ultimate moment of resistance. Use M20 & Fe415.

⟹ Given data:-

D_F = ~~800~~ mm 850 mm

D_f = ~~850~~ mm 100 mm

b_w = 275 mm

d = 475 mm = d

FCK = 20

Fy = 415

4 – 20mm ϕ

① Ast calⁿ:-

$$A_{st} = 4 \times \frac{\pi}{4} \times 20^2$$

$$\boxed{A_{st} = 1256.63 \text{ mm}^2}$$

② Assume NA passing through flange ($x_u < D_f$)

$C_u = T_u$

$$0.36 f_{ck} b_f x_u = 0.78 A_{st} f_y$$

$$x_u = \frac{0.78 \times 1256.63 \times 415}{0.36 \times 20 \times 850}$$

$$\boxed{x_u = 118.93 \text{ mm}}$$

$x_u = 79.13 \text{ mm}$

$D_f = 100 \text{ mm}$

$x_u < D_f$

$\frac{x_{umax}}{d} = 0.48$

$x_{umax} = 0.48 \times 475$

$\boxed{x_{umax} = 228 \text{ mm}}$

$x_u < x_{umax}$.

under reinforcement

$M_u = t_u \times z_u$

$= 0.87 \times f_y \times A_{st} (d - 0.42 x_u)$

$= 0.87 \times 415 \times 1256.63 (475 - 0.42 \times 79.13)$

$\boxed{M_u = 201.38 \text{ KN.m}}$

8

SVERI'S College of Engineering, Pandharpur

Department of Civil Engineering

T.Y. CIVIL UT-III Academic Year -2023-2024

Design of Concrete Structure-I

Div.: - A

Day and Date: /12/2023 **Marks - 20**

Time- pm pm **Duration-1 Hours**

CO	CO STATEMENT	Blooms Level	Max. Marks
CE55C.5	Design of beam for combined shear, bending & torsion as per IS code.	BL 4	10

Instructions - I) All questions are compulsory.

II) Assume suitable data if required.

Q. 1	MCQ'S/objectives type questions.	Marks	Related CO & Blooms Level	PI
1)	At the limit state of collapse, an RC beam of section 300 mm × 600 mm, subjected to factored SF = 95 KN, factored torsional moment = 45 KN-m and factored B.M. = 115 KN-m. The equivalent flexural moment (M_{eq}) to designing longitudinal tension steel is_____ A. 194.50 KN-m. B. 209 KN-m C. 200 KN-m D. 213 KN-m	02	CE55C.5 & BL 2	PI:2.1.2
2)	At the limit state of collapse, an RC beam of section 300 mm × 600 mm, subjected to factored SF = 95 KN, factored torsional moment = 45 KN-m and factored B.M. = 115 KN-m. the equivalent shear force (V_e) is_____ A. 335 KN. B. 300 KN C. 354 KN D. 68 KN	02	CE55C.5 & BL 2	PI:2.1.2

Q. 3	Solve the Following			
1)	Design the reinforcements required for a rectangular beam section with following data: Size of the beam: 300 mm x 600 mm. Grade of Concrete –M15 Grade of Steel -Fe 415 Factored shear force V = 75 KN Factored torsional moment T=45 KN-m Factored bending moment M = 60 KN-m.	08	CE55C.3 & BL 4	PI:2.1.1, 3.1.1,2,3 & 3.2.1 & 3.3.1
2)	Design the reinforcements required for a rectangular beam section with following data: Size of the beam: 300 mm x 550 mm. Grade of Concrete -M20 Grade of Steel -Fe 415 Factored shear force V = 42 KN Factored torsional moment T=25 KN-m Factored bending moment M = 55 KN-m.	08	CE55C.3 & BL 4	PI:2.1.1, 3.1.1,2,3 & 3.2.1 & 3.3.1

.....All the Best.....

Date: 13-12-2023

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: UT-3
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.5	CE55C.5	CE55C.5		
			Max. Marks	4	16			
			Q. No. / Total Obtained Marks	Q1	Q2	Max. Marks	Obtained Marks	% Marks
202101053015889	211CE11008	SAYLI VIJAY ASHTUL	19	4	15	20	19	95.00
202201053044293	221CE12003	AISHWARYA ROHIDAS CHAVAN	19	4	15	20	19	95.00
202101053016558	211CE11029	NAMRATA DINKAR CHAVARE	18	4	14	20	18	90.00
202101053016667	211CE11023	SANIKA GAJANAN DESHMUKHE	18	4	14	20	18	90.00
202201053044272	221CE12024	KAJAL SHRAVAN KAMBLE	20	4	16	20	20	100
202101053016659	211CE11019	PRIYANKA PRATAP KARANDE	19	4	15	20	19	95.00
202101053016789	211CE11025	RUTUJA MAHESH KAWADE	18	4	14	20	18	90.00
202201053044526	221CE12022	PRIYANKA IRANNA KOLI	20	4	16	20	20	100
202101053016839	211CE11026	AISHWARYA PRADIP KUMBHAR	19	4	15	20	19	95.00
202101053016661	211CE11005	AAKANKSHA JAGANNATH MANE	20	4	16	20	20	100
202101053016617	211CE11012	POOJA DADASAHEB NAGANE	19	4	15	20	19	95.00
202101053016860	211CE11010	ALVIRA AMIN SHAIKH	19	4	15	20	19	95.00
202101053016610	211CE11032	ANISHA AMAR SURVASE	18	4	14	20	18	90.00
202101053016831	211CE11014	RAMESH BAPU BANDGAR	14	4	10	20	14	70.00
202101053016834	211CE11004	AJAY BHAGWAT BANSODE	11	0	11	20	11	55.00
202101053016657	211CE11031	PRATHMESH LAXMAN CHAVAN	19	4	15	20	19	95.00
202101053016849	211CE11030	SWARUP RAJARAM CHAVAN	18	4	14	20	18	90.00
202101053016578	211CE11011	SWAPNIL MAHADEV DHULAGUDE	19	4	15	20	19	95.00
202101053016724	211CE11007	VISHWAJEET SANJAY GHADGE	7	0	7	20	7	35.00
202201053044379	221CE12040	SAMARTH PRAKASH HIPPARGI	18	4	14	20	18	90.00
202101053016729	211CE11021	VITTHAL SAINATH HOTKAR	15	4	11	20	15	75.00
202101053015906	211CE11017	PRATIK DADA KARE	15	4	11	20	15	75.00
202101053016869	211CE11028	ABHIJIT ASHOK KHALADKAR	14	4	10	20	14	70.00
202201053044314	221CE12035	SANKET CHANDRAKANT LENDAVE	14	4	10	20	14	70.00
202101053016716	211CE11013	GOPAL DATTA MADANE	17	4	13	20	17	85.00
202201053044383	221CE12045	RAHUL MANAGENI MASHALE	19	4	15	20	19	95.00
202201053044347	221CE12015	AVINASH SHARANAPPA NILGAR	18	4	14	20	18	90.00
202201053044356	221CE12021	VIGHNAHAR SHARAD NILGAR	18	4	14	20	18	90.00
202201053044342	221CE12005	ABHISHEK SURESH NIMBAL	19	4	15	20	19	95.00
202201053044380	221CE12051	YASH SATISH NIMBALKAR	17	4	13	20	17	85.00
202201053044300	221CE12058	MAHESH LAXMAN PADVALE	10	4	6	20	10	50.00
202101053016921	211CE11027	OM VIVEKANAND PATIL	18	4	14	20	18	90.00
202101053016897	211CE11015	RAJ MOHAN RONGE	7	0	7	20	7	35.00
202101053016926	211CE11002	AKASH SUBHASH SHEGAR	15	4	11	20	15	75.00
202101053016854	211CE11009	DATTATRAY MARUTI SHEJAL	7	0	7	20	7	35.00
202101053016900	211CE11024	YUVRAJ SITARAM SHINDE	13	4	9	20	13	65.00
202201053044366	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	18	4	14	20	18	90.00

Number of Students: 37

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE58C.5
No. of Students achieving Target Level	32
No. of Applicable Students	37
% Students achieving Target Level	86.49
Attainment	3

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: UT - III Date: 31/12/23

Name of Student: Aakanksha Jagannath Mane

Class: TY B Tech Division: A

Roll No.: A Subject: DCS - I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO5SC5	2	2.1.2	1	02	02					04
CO5SC5	4	2.1.1, 3.1.1, 3.2, 3.3.1	2	08	08					16
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	20/20

Q. 1

1] a]

2] a]

4]

Q. 2) ii)

Given:

$b = 300\ mm$ $\quad D = 600\ mm$

$M_u = 60\ kN\cdot m$ $\quad T_u = 45\ kN\cdot m$

$V_u = 75\ kN$ $\quad f_y = 415\ N/mm^2$

$f_{ck} = 25\ N/mm^2$

assume clear cover 25 mm & bar dia 20 mm & bar dia. of stirrups 10 mm

Step 1: Depth cal^n:

Assume 25 mmϕ

$d = D - \text{clear cover} - \text{dia of stirrups} - \frac{\text{bar dia}}{2}$

$= 600 - 25 - 10 - \frac{25}{2} = 552.5\ mm$

$\approx 550\ mm$

Step 2: Equivalent B.M. cal^n

$M_{eq} = M_u + M_t$

$M_t = T_u \left(\frac{1 + D/b}{1.7}\right) = 45 \times \left(\frac{1 + 600/300}{1.7}\right)$

$= 79.41\ kN\cdot m$

$M_{eq} = 60 + 79.41 = 139.41\ kN\cdot m$

M_u & M_t i.e. 60 & 79.41

$M_u < M_t$

Sec^n is double R/F sec^n

$M_{e2} = M_t - M_u$

$= 79.41 - 60 = 19.41\ kN\cdot m$

Step 3: Ast cal^n:

$$A_{st1} = \frac{0.5 f_{ck} bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_{eq}}{f_{ck} bd^2}}\right]$$

$$= \frac{0.5 \times 25 \times 300 \times 550}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 139.41 \times 10^6}{25 \times 300 \times 550^2}}\right]$$

$= 813.30\ mm^2$

$$A_{st2} = \frac{0.5 f_{ck} bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_{e2}}{f_{ck} bd^2}}\right]$$

$$= \frac{0.5 \times 15 \times 300 \times 550}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 19.45 \times 10^6}{15 \times 300 \times 550^2}}\right]$$

$$= 99.45 \text{ mm}^2$$

Area of one bar $= \frac{\pi}{4} \times 25^2 = 490.87 \text{ mm}^2$

No. of bars $= \frac{\text{Ast}}{\text{Area of one bar}}$

$= \frac{813.30}{490.87} = 1.65 \approx 2$ bar

No. of bar $c = \frac{99.45}{\frac{\pi}{4} \times 12^2} = 0.87 \approx 1$ bar

Provide 2 bars of 25 mm dia. at bottom & 2 bar of 12 mm dia at the top as a nominal steel because one cannot provide.

Ast prov. t = No. of bar $\times$ area of one bar

$= 2 \times 490.87 = 981.74 \text{ mm}^2$

Ast prov. $c = 2 \times \frac{\pi}{4} \times 12^2 = 113.09 \times 2 = 226.19 \text{ mm}^2$

$\therefore pt = \frac{100 \text{ Ast prov } t}{bd} = \frac{100 \times 981.74}{300 \times 550} = 0.59\%$

$\therefore pt = \frac{100 \text{ Ast prov } c}{bd} = \frac{100 \times 226.19}{300 \times 550} = 0.13\%$

Step 4: checks for design

i) Check for shear

$\tau_{ve} = \frac{Ve}{bd}$

$Ve = Vu + 1.6 \frac{Tu}{b} = 75 + 1.6 \frac{\times 45}{0.3} = 315 \text{ kN}$

$\tau_{ve} = \frac{315 \times 10^3}{300 \times 550} = 1.90$

$\tau_c = ?$

p_t at support $= \frac{0.59}{2} = 0.29$

0.25	0.35
0.29	?
0.50	0.46

$\tau_c = 0.36$

$\tau_{ve} \times \tau_c$

provide 2-legged 10 mm stirrups

$A_{sv} = 2 \times \frac{\pi}{4} \times 10^2 = 157.07\ mm^2$

$$A_{sv} = \frac{T_u s_v}{b_1 d_1 (0.87 f_y)} + \frac{V_u s_v}{2.5 d_1 (0.87 f_y)}$$

$b_1 = 300 - (25+25) - 20 - \frac{25}{2} - \frac{25}{2} = 205\ mm$

$d_1 = 600 - (25+25) - 20 - \frac{25}{2} - \frac{12}{2} = 511.5\ mm$

$$157.07 = \frac{45 \times 10^6 s_v}{205 \times 511.5 (0.87 \times 415)} + \frac{75 \times 10^3 s_v}{2.5 \times 511.5 (0.87 \times 415)}$$

$157.07 = 1.35 s_v$

$s_v = 116.30 \cong 115\ mm$

$$A_{sv} = \frac{(\tau_{ve} - \tau_c) b s_v}{0.87 f_y}$$

$$157.07 = \left(\frac{1.90 - 0.36}{0.87 \times 415}\right) \times 300 \times s_v$$

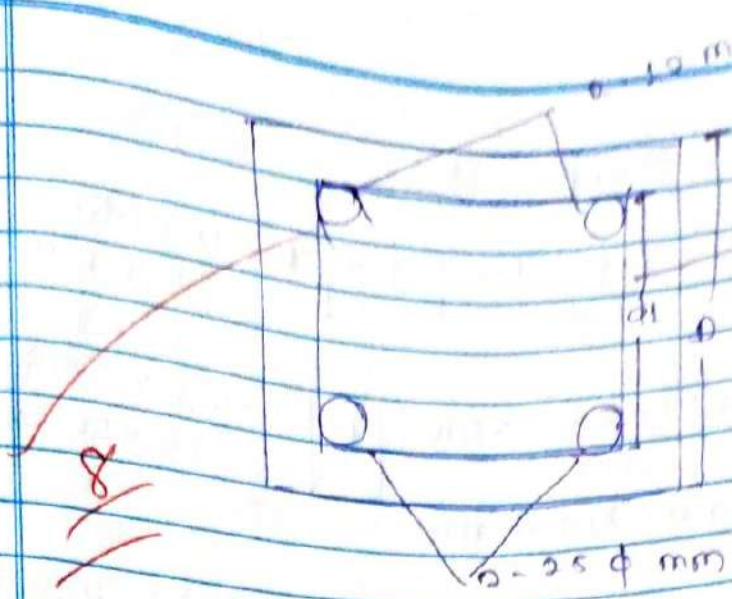
$s_v = 122.74\ mm \cong 120\ mm$

i) $x_1 = 300 - 25 - 25 - 10 - \frac{10}{2} - \frac{10}{2} = 240\ mm$

$y_1 = 600 - 25 - \frac{10}{2} - 25 - \frac{10}{2} = 540\ mm$

ii) $\frac{x_1 + y_1}{4} = \frac{240 + 540}{4} = 195\ mm$

iii) 300 mm



2]

Given data:

$b = 300$ mm $d = 550$ mm $f_{ck} = 20$ MPa

$f_y = 415$ $V_u = 42$ kN $T_u = 25$ kN-m

$M_u = 55$ kN.m

Assume clear cover 25 mm ϕ bar dia. 25 mm ϕ bar dia. of stirrups 10 mm.

Step 1: Depth cal^n:

$d = D - \text{clear cover} - \text{dia of stirrups} - \frac{\text{bar dia}}{2}$

$= 550 - 25 - 10 - \frac{25}{2} = 502.5 \approx 500$ mm

Step 2: Equivalent B.M. cal^n

$M_{eq} = M_u + M_t$

$M_t = T_u \left(\frac{1 + D/b}{1.7} \right) = 25 \times \left(\frac{1 + 550/300}{1.7} \right)$

$= 41.66$ kN.m

$M_{eq} = 55 + 41.66 = 83.32$ kN.m.

$M_u > M_t$ singly R/f

Check for depth.

$BM = 0.138 f_{ck} b d^2$

$55 \times 10^6 = 0.138 \times 20 \times d^2_{req} \times 300$

$d_{req} = 257.73$ mm

$d_{prov} = 500$ mm

$d_{req} < d_{prov}$

Step 3: Steel cal^n

$$Ast = \frac{0.5 fck\, bd}{fy}\left[1 - \sqrt{1 - \frac{4.6 My}{fck\, bd^2}}\right]$$

$$= \frac{0.5 \times 20 \times 300 \times 500}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 83.32 \times 10^6}{20 \times 300 \times 500^2}}\right]$$

$Ast = 495.77\ mm^2$

Area of one bar $= \frac{\pi}{4} \times 25^2 = 490.87\ mm^2$

No. of bar $= \frac{495.77}{490.87} = 1.009 \approx 2$ bars

Provide 2 bars of 25mm dia at bottom & 2 bars at 12 mm dia at top as a nominal steel.

Ast pro $x = 2 \times 490.87 = 981.74\ mm^2$

$\therefore pt = \frac{100\, Ast\, prov}{bd} = \frac{100 \times 981.74}{300 \times 500} = 0.65\%$

Step 4: Checks for design:

Check for shear

$\tau ve = \frac{Ve}{bd}$

$Ve = Vu + 1.6 \frac{Mu}{b} = 42 + 1.6 \times \frac{25}{0.300}$

$Ve = 175.33\ kN$

$\tau ve = \frac{175.33 \times 10^3}{300 \times 500} = 1.16\ Mpa$

$\tau c = ?$

pt at support $= \frac{0.65}{2} = 0.32$

0.25	—	0.35
0.32	—	?
0.50	—	0.46

$\tau c = 0.38\ Mpa$

$\tau ve > \tau c$

Provide 2 legged 10mm stirrups

$$A_{sv} = 2 \times \frac{\pi}{4} \times 10^2 = 157.07 \text{ mm}^2$$

$$A_{sv} = \frac{T_{us} v}{b_1 d_1 (0.87 f_y)} + \frac{V_{us} v}{0.5 d_1 (0.87 f_y)}$$

$$b_1 = 300 - (25 + 25) - 20 - \frac{25}{2} - \frac{25}{2} = 205 \text{ mm}$$

$$d_1 = 550 - (25 + 25) - 20 - \frac{25}{2} - \frac{12}{2} = 461.5 \text{ mm}$$

$$157.07 = \frac{25 \times S_v \times 10^6}{205 \times 461.5 (0.87 \times 415)} + \frac{40 \times 10^3 S_v}{0.5 \times 461.5 (0.87 \times 415)}$$

$$157.07 = 0.731 S_v + 0.1 S_v$$

$$S_v = 188.82 \text{ mm} \simeq 180 \text{ mm}$$

$$A_{sv} = \frac{(\tau_{ve} - \tau_c) b S_v}{0.87 f_y}$$

$$157.07 = \frac{(1.16 - 0.38) \times 300 \times S_v}{0.87 \times 415}$$

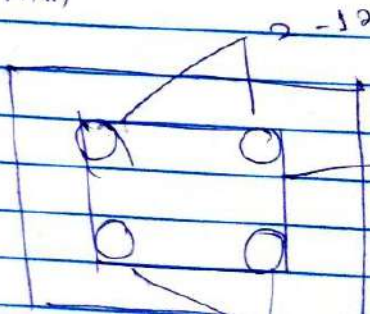
$$S_v = 242.35 \simeq 240 \text{ mm}$$

i) $x_1 = 300 - 25 - \frac{10}{2} - 25 - \frac{10}{2} = 240 \text{ mm}$

$y_1 = 550 - 25 - \frac{10}{2} - 25 - \frac{10}{2} = 490 \text{ mm}$

ii) $\frac{x_1 + y_1}{4} = \frac{240 + 490}{4} = 182.5 \text{ mm}$

iii) 300 mm



Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: III Date: 21/12/23

Name of Student: Khaladkar Abhijit Ashok

Class: T.Y Division: A

Roll No.: 27 Subject: DCS - I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO5,C5	2	212	1	02	02					04
CO5,C5	4	211 3112 321 331	2	06	04					10
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	14/20

Q.1

(1)

→ 2 / a)

(2)

→ 2 / a)

4/

Q.2

→

Given :

Size = 300 x 500 mm

f_{ck} = 15 mpa

f_y = 415 mpa

V_u = 65 kN-m

T_u = 45 kN-m

M_u = 50 kN-m

Step 1 : Cal. effective depth :

Assume

effective cover = 25 mm

Bar ϕ = 20 mm

Stirrup ϕ = 10 mm

d = D - cover - $\frac{\phi}{2}$ - stirup

$= 500 - 25 - \frac{20}{2} - 10$

$\boxed{d = 455 \text{ mm}}$

Step 2 : Calculation equivalent BM :

$M_{e_1} = M_t + M_r$

$M_t = T_u \left(\frac{1 + D/d}{1.7} \right)$

$= 45 \left(\frac{1 + 500/300}{1.7} \right)$

$\boxed{M_f = 79.41 \text{ kN.m}}$

$M_{e_1} = 60 + 79.41$

$M_{e_1} = 139.41 \text{ kN.m}$

$M_u < M_b$

∴ Doubly R/F

∴ Provide steel in compression zone as mer

$M_{e_2} = M_R - M_u$

$= 79.41 - 60$

$M_{e_2} = 19.41 \text{ kN.m}$

* Check for depth:

$BM = 0.138 f_{ck} b d^2$

$139.41 \times 10^6 = 0.138 \times 15 \times 350 \times d^2$

$d_{req} = 473.8 \text{ mm}$

$d_{provided} = 555 \text{ mm}$

$d_{req} < d_{provided}$

Hence safe

Hence safe

Step 3: Steel Calculation for Torsion (M_{e_1}):

$$A_{st} = \frac{0.5 f_{ck} b d}{f_y} \left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} b d^2}}\right]$$

Bar ϕ = 20 mm

Stirrups ϕ = 10 mm

$d = D - \text{cover} - \frac{\phi}{2} - \text{stirrup}$

$= 550 - 25 - \frac{20}{2} - 10$

$d = 505$ mm

Step 2 : Calculation of equivalent B.M

$M_{e_1} = M_u + M_x$

$M_f = T_u \left(\frac{1 + D/d}{1.7} \right)$

$= 25 \left(\frac{1 + 550/300}{1.7} \right)$

$\boxed{M_f = 41.66 \text{ kN.m}}$

$M_{e_1} = M_u + M_{-1}$

$= 55 + 41.66$

$\boxed{M_{e_1} = 96.66}$

$M_u > M_f$

∴ Singly f/F

check for depth

$BM = 0.138 \times f_{ck} \times bd^2$

$96.66 \times 10^6 = 0.138 \times 20 \times 300$

$\boxed{d = 341.67 \text{ mm}}$

$d_{provided} = 505\ mm$

$d_{req} < d_{provided}$

Step 3 : Steel Coil.

$$A_{st} = \frac{0.5 \times f_{ck}\, bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6\, M_u}{f_{ck}\, bd^2}}\right]$$

$$A_{st} = \frac{0.5 \times 20 \times 300 \times 505}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 55 \times 10^6}{20 \times 300 \times 505^2}}\right]$$

$$A_{st} = 575.87\ mm^2$$

Area of Single bar $= \frac{\pi}{4} \times 20^2$

$= 314.15\ mm^2$

No. of bar $= \frac{575.87}{314.15}$

$= 1.83 \approx 2$ No

A_{st} provided $= 2 \times \frac{\pi}{4} \times 20^2$

A_{st} provided $628.31\ mm^2$

$$p_t = \frac{100 \times A_{st}}{bd}$$

$$= \frac{100 \times 628.31}{300 \times 505}$$

$$p_t = 0.41$$

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: 3 Date: 2/12/23

Name of Student: Dattatray Maruti Shejal.

Class: T.Y. Division: A

Roll No.: 40 Subject: DES - I.

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1	0	6					0
CO5SC.5	2	2.1.2	2	07	0					07
CO5SC5	4	2.1.1 3.1.2.3 3.2.1 3.3.1	3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	07/20

Q.1

→ Given,

b = 300 mm
D = 600 mm
m_d = 60 kN.m.
T_u = 45 mpa.
fck = 15 mpa.
fy = 415 mpa.

① cal. effective depth,

Assume
Eff. cover - 25 mm
bar ϕ - 20 mm
stirrups ϕ - 10 mm

$d = D - \text{cover} - \frac{\phi}{2} - \text{stirup.}$

$= 600 - 25 - \frac{20}{2} - 10$

$d = 555$ mm.

(c) Cal. equivalent Bm.

$M_{e_1} = M_4 + M_b$.

$M_b = F_4 \left(1 + \frac{D/b}{1.7}\right)$

$= 45 \left(1 + \frac{600/300}{1.7}\right)$

$m_t = 79.41$ kN.m

$m_{e_1} = 60 + 79.41$

$m_{eq} = 139.41$ kN.m

$m_4 < m_t$.

So, Doubly R/F.

provide steel in compression zone as m_{eq}.

$m_{e_2} = m_t - M_4$
$= 79.41 - 60$

$M_{e_2} = 19.41$ kN.m

check for depth.

$B_m = 0.138 f_{ck} bd^2$

$139.41 \times 10^6 = 0.138 \times 15 \times 300 \times d^2$

$d_{req} = 473.8$ mm

$d_{prov} = 555$ mm

(5) steel cal^{n}

For Tension (mcl)

$$A_{st_1} = 0.5 \frac{f_{ck} bd}{f_y} \left[1 - \frac{4.6 M_{e_1}}{f_{ck} bd^2}\right]$$

$$= \frac{0.5 \times 15 \times 300 \times 585}{415} \left[1 - \frac{4.6 \times 394.1 \times 10^6}{15 \times 300 \times 585^2}\right]$$

$$\boxed{A_{st_T} = 803.28 \text{ mm}^2}$$

Area of single bar $= \pi/4 \times 20^2$

$$= 314.15 \text{ mm}^2$$

No. of bar $= \frac{A_{st_T}}{\pi/4 \times 20^2}$

$$= \frac{803.28}{314.15}$$

$$= 2.55 \simeq 3 \text{ Nos.}$$

A_{st} provided :

$$= 3 \times \pi/4 \times 20^2$$

$$\boxed{A_{st_T} = 942.47 \text{ mm}^2}$$

$$p_t = \frac{100 A_{st\,prov.}}{bd}$$

$$= \frac{100 \times 902.47}{300 \times 585}$$

$$\boxed{P_t = 0.56}$$

provide 3 - 20mm ϕ as main steel in tension zone.

* for compression:

$$A_{stc} = \frac{0.5 f_{ck} b d}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_{e3}}{f_{ck} b d^2}}\right]$$

$$= \frac{0.5 \times 15 \times 300 \times 555}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 19.4 \times 10^6}{15 \times 300 \times 555^2}}\right]$$

$$A_{stc} = 98.52 \text{ mm}^2$$

Assume ϕ = 12 mm for compression zone.

Area of single bar = $\pi/4 \times 12^2$

= 113.09 mm²

no. of bar = $\frac{A_{stc}}{\pi/4} \times 12^2$

$= \frac{98.52}{113.09}$

= 0.87 ≅ 2 nos

Ast provide = $2 \times \pi/4 \times 12^2$

$A_{stc} = 226.19 \text{ mm}^2$

provide 2 - 12 mm ϕ as compression.

Date: 25-10-2023

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: ISE-1
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.1	CE55C.2	CE55C.1	CE55C.2	CE55C.1			CE55C.2		
			Max. Marks	2	2	6	10						
			Q. No. / Total Obtained Marks	Q1	Q2	Q3	Q4	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
2.02101E+14	211CE11008	SAYLI VIJAY ASHTUL	16	2	1	4.5	8	8	7	87.50	12	9	75.00
2.02201E+14	221CE12003	AISHWARYA ROHIDAS CHAVAN	14	1	0	5	8	8	6	75.00	12	8	66.67
2.02101E+14	211CE11029	NAMRATA DINKAR CHAVARE	13	1	1	5	6	8	6	75.00	12	7	58.33
2.02101E+14	211CE11023	SANIKA GAJANAN DESHMUKHE	9	1	1	5	2	8	6	75.00	12	3	25.00
2.02201E+14	221CE12024	KAJAL SHRAVAN KAMBLE	13	1	1	6	5	8	7	87.50	12	6	50.00
2.02101E+14	211CE11019	PRIYANKA PRATAP KARANDE	15	2	2	5	6	8	7	87.50	12	8	66.67
2.02101E+14	211CE11025	RUTUJA MAHESH KAWADE	8	1	1	4	2	8	5	62.50	12	3	25.00
2.02201E+14	221CE12022	PRIYANKA IRANNA KOLI	15	1	0	4.5	9	8	6	75.00	12	9	75.00
2.02101E+14	211CE11026	AISHWARYA PRADIP KUMBHAR	11	0	1	5	5	8	5	62.50	12	6	50.00
2.02101E+14	211CE11018	DIVYA RAJENDRA LATAKE	12	2	2	4	4	8	6	75.00	12	6	50.00
2.02101E+14	211CE11005	AAKANKSHA JAGANNATH MANE	19	2	2	6	9	8	8	100	12	11	91.67
2.02101E+14	211CE11012	POOJA DADASAHEB NAGANE	11	2	0	5.5	3	8	8	100	12	3	25.00
2.02101E+14	211CE11022	SNEHAL NAVNATH RONGE	15	1	1	5.5	7	8	7	87.50	12	8	66.67
2.02101E+14	211CE11010	ALVIRA AMIN SHAIKH	9	2	1	5	1	8	7	87.50	12	2	16.67
2.02101E+14	211CE11032	ANISHA AMAR SURVASE	11	1	1	5	4	8	6	75.00	12	5	41.67
2.02201E+14	221CE12038	SHIVALINGAMMA CHANDRAKANT TENGALE	15	2	2	5	6	8	7	87.50	12	8	66.67
2.02101E+14	211CE11014	RAMESH BAPU BANDGAR	5	2	2	0	1	8	2	25.00	12	3	25.00
2.02101E+14	211CE11004	AJAY BHAGWAT BANSODE	11	2	2	3	4	8	5	62.50	12	6	50.00
2.02101E+14	211CE11031	PRATHMESH LAXMAN CHAVAN	8	2	2	0	4	8	2	25.00	12	6	50.00
2.02101E+14	211CE11030	SWARUP RAJARAM CHAVAN	19	2	2	6	9	8	8	100	12	11	91.67
2.02101E+14	211CE11011	SWAPNIL MAHADEV DHULAGUDE	14	2	2	5	5	8	7	87.50	12	7	58.33
2.02101E+14	211CE11007	VISHWAJEET SANJAY GHADGE	8	2	2	4	0	8	6	75.00	12	2	16.67
2.02201E+14	221CE12040	SAMARTH PRAKASH HIPPARGI	9	2	2	5	0	8	7	87.50	12	2	16.67
2.02101E+14	211CE11021	VITTHAL SAINATH HOTKAR	12	2	2	4	4	8	6	75.00	12	6	50.00

2.02101E+14	211CE11017	PRATIK DADA KARE	8	2	2	2	2	8	4	50.00	12	4	33.33
2.02101E+14	211CE11028	ABHIJIT ASHOK KHALADKAR	8	2	2	2	2	8	4	50.00	12	4	33.33
2.02201E+14	221CE12035	SANKET CHANDRAKANT LENDAVE	10	2	2	6	0	8	8	100	12	2	16.67
2.02101E+14	211CE11013	GOPAL DATTA MADANE	18	2	2	5	9	8	7	87.50	12	11	91.67
2.02201E+14	221CE12045	RAHUL MANAGENI MASHALE	12	2	2	0	8	8	2	25.00	12	10	83.33
2.02101E+14	211CE11003	TUKARAM SHANKAR METAKARI	14	2	2	4	6	8	6	75.00	12	8	66.67
2.02201E+14	221CE12015	AVINASH SHARANAPPA NILGAR	19	2	2	6	9	8	8	100	12	11	91.67
2.02201E+14	221CE12021	VIGHNAHAR SHARAD NILGAR	15	2	2	5	6	8	7	87.50	12	8	66.67
2.02201E+14	221CE12005	ABHISHEK SURESH NIMBAL	20	2	2	5.5	10	8	8	100	12	12	100
2.02201E+14	221CE12051	YASH SATISH NIMBALKAR	9	2	2	5	0	8	7	87.50	12	2	16.67
2.02201E+14	221CE12058	MAHESH LAXMAN PADVALE	10	2	2	6	0	8	8	100	12	2	16.67
2.02101E+14	211CE11027	OM VIVEKANAND PATIL	9	2	2	5	0	8	7	87.50	12	2	16.67
2.02101E+14	211CE11015	RAJ MOHAN RONGE	10	2	2	5	1	8	7	87.50	12	3	25.00
2.02101E+14	211CE11002	AKASH SUBHASH SHEGAR	12	2	2	4	4	8	6	75.00	12	6	50.00
2.02101E+14	211CE11009	DATTATRAY MARUTI SHEJAL	10	2	2	5.5	0	8	8	100	12	2	16.67
2.02101E+14	211CE11024	YUVRAJ SITARAM SHINDE	10	2	2	5	0.5	8	7	87.50	12	3	25.00
2.02201E+14	221CE12047	SURESH BHIMANNA SUNAGAR	14	2	2	5	5	8	7	87.50	12	7	58.33
2.02201E+14	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	20	2	2	6	10	8	8	100	12	12	100
2.02201E+14	221CE12039	SHRAVAN SURYAKANT WAGHAMODE	15	2	2	5.5	5	8	8	100	12	7	58.33

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C.1	CE55C.2
No. of Students achieving Target Level	38	15
No. of Applicable Students	43	43
% Students achieving Target Level	88.37	34.88
Attainment	3	0

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / ~~Unit Test~~ No. I Date 22/09/2023

Name of Student Chavan Prathmesh Laxman

Class TY. Civil Division A

Roll No. 20 Subject DCS-I

Sign of Supervisor 22/09/23 Marks

CO	BL	PI Code	Q.No	a	b	c	d	e	f	Total
CO1SC1	2	212	1	01	01					02
CO1SC2	2	222	2	01	01					02
CO2SC1	3	212	3	02	02	02				06
CO2SC2	3	311.23 321 331	4	09						09
			5							
			6							
			7							
			8							
									Grand Total	19/20

Q. 1.

1

→ a.

2.

→ a.

Q. 2.

1

a.

2

a

Q. 3.

1.

→ Partial safety factor :-

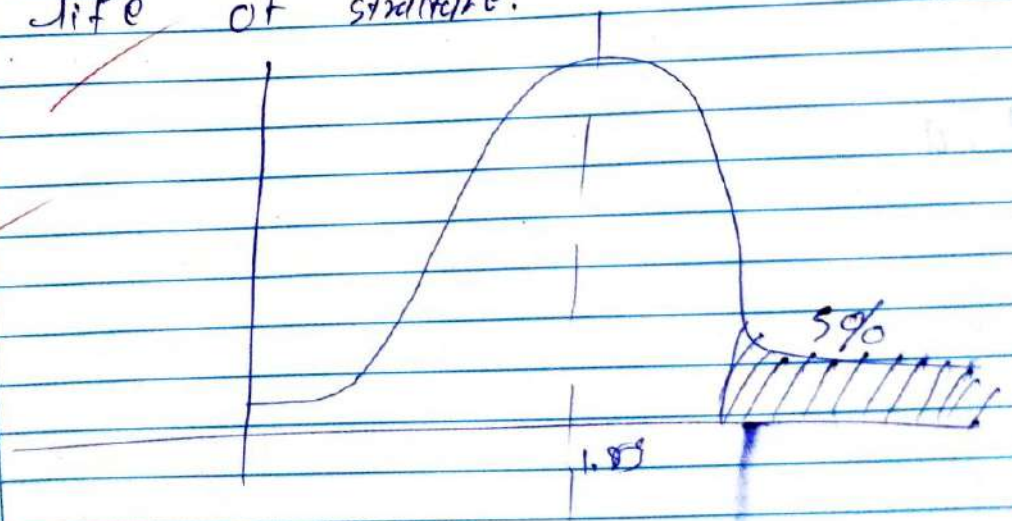
Partial safety factor γ_s for load The values of γ_s given Table 18 shall normally be used.

when assessing the strength of structure or structural member for the limit state of collapse, the values of partial safety factor γ_m should be taken as 1.5 for concrete & 1.15 for steel.

load Combination	limit state Collapse			limit state serviceability		
	DL	LL	WL	DL	LL	WL
DL + LL	1.5	1.5	1	1	1	—
DL + WL	1.5	~~1.5~~	1.5	1	—	1
DC + WL + LL	1.2	1.2	1.2	1	0.8	0.8

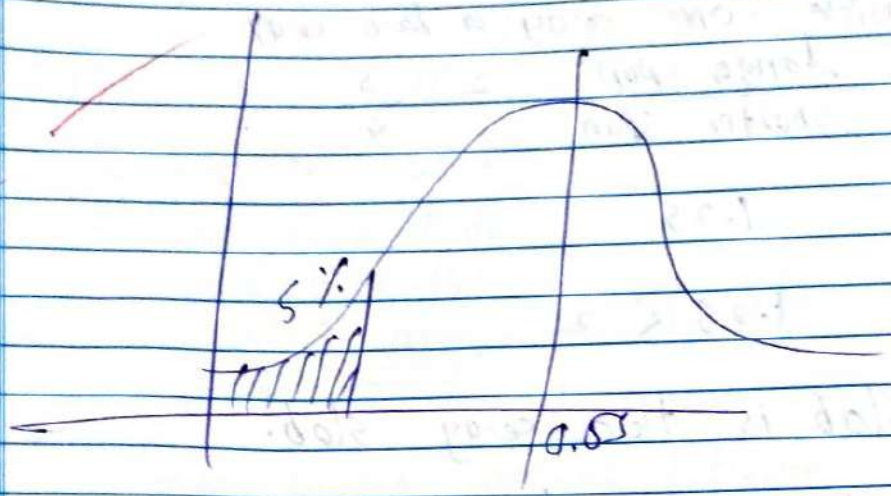
2.

→ The term 'characteristic load' means that value of load which has a 95 % probability of not being exceeded during the life of structure.



3.

→ The term 'characteristic strength' means that value of the strength of the material below which not more than 5 % of the test results are expected to fall. The characteristic strength of concrete shall be in accordance with Table 2.



6

Q. 4.

→ Given :-

Short span = 4 m

Long span = 5 m

CC = 6 KN/m²

FFL = 1 KN/m²

fck = 20

fy = 415

I. Diside one way or two way.

$$\frac{\text{Longer span}}{\text{shorter span}} = \frac{5}{4}$$

$$1.25$$

$$1.25 < 2$$

slab is two way slab.

II depth calculation

$$\frac{\text{span}}{d} = 20 \times M.F$$

Assume P_t is 0.3 %.

$$Fs = 0.58 \cdot fy \quad \frac{\text{Ast req}}{\text{Ast pro.}}$$

$$= 0.58 \times 415 \times 1$$

$$= 240.7$$

$$\cong 240.$$

MF = 1.45

form the IS-456-2000 fig. No. 4 page No 38.

$$\frac{4000}{d} = 20 \times 1.45$$

$$d = 137.93 \cong 140 \text{ mm}$$

Assume 10 mm - bars. Assume 10 mm bar ϕ.

$D = d + \frac{\phi}{2} + C.C$ ϕ = dia. of bar
C.C. = clear cover

$D = 140 + \frac{10}{2} + 15$

$D = 160$ mm

$d = 160 - \left(\frac{\phi}{2} - 15\right)$

$d_x = 140$ mm $\quad d_y = d_x$ - bar dia

$d_y = 140 - 10 = 130$ mm

III Effective span.

1) for shorter span

= Clear Span + d_x

= 4 + 0.140

= 4.140 m — adopte.

. Clear span + $\frac{\text{bearing}}{2}$ + $\frac{\text{bearing}}{2}$

$4 + \frac{0.150}{2} + \frac{0.150}{2}$ Assume bearing 0.150 mm.

= 4.150 mm

2) for longer span

Clear span + d_y

= 5 + 0.130

= 5.130 m — adopte.

clear span + $\frac{\text{bearing}}{2}$ + $\frac{\text{bearing}}{2}$

$5 + \frac{0.150}{2} + \frac{0.150}{2}$

= 5.150 m

IV Load Calculation

1) DL = Volume x ρ
= l b d x 25
= 0.160 x 25
= 3.5 KN/m²

2) LL = 4 KN/m²

3) FF = 1 KN/m²

Total load = DL + LL + FF
= 3.5 + 4 + 1
= 8.5 KN/m²

Ultimate load = Total load x FOS
= 8.5 x 1.5
= 12.75 KN/m².

V.

$\frac{l_y}{l_x} = \frac{5.130}{4.140}$

= 1.2391

1.2 → 0.072
1.2391 → 0.074
1.3 → 0.079

$\alpha_x = 0.0747 \longrightarrow \alpha_y = 0.056$

VI Bending moment calculation

$M_x = \alpha_x \times w \times l_x^2$
$= 0.0747 \times 12.75 \times (4.14)^2$

$M_x = 16.32$ KN.m

c.

$M_y = \lambda_y$ cell Cl_x^2

$= 0.055 \quad 12.75 \quad (6.16)^2$

$M_y = 12.23$ KNm

BM $= MR$

$16.32 \times 10^6 = 0.138 \times f_{ck}\, b d^2$

$16.32 \times 10^6 = 0.138 \times 20 \times$

$d_{req} = 76.89$

$d_{prov} = 160$

$d_{req} < d_{prov}$ Hence ok

(iii) Ast Calculation.

$$Ast = \frac{0.5\, f_{ck}\, b.d}{f_y}\left[1 - \sqrt{1 - \frac{4.6\, M_{ux}}{f_{ck}\, b d^2}}\right]$$

$$= \frac{0.5 \times 20 \times 1000 \times 160}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 16.32 \times 10^6}{20 \times 1000 \times 160^2}}\right]$$

$Ast = 340.181 \ mm^2$

Assume 10 mm ϕ bars.

$$\text{No. of bars} = \frac{Ast}{\text{Area of single bar}}$$

$$= \frac{340.181}{\pi/4\ 10^2}$$

$= 4.331$

$\cong 5$ No. of bars

Ast provided $= 5 \times \pi/4 (10)^2 = 392.69 \ mm^2$

VIII Spacing Calculation

1) $\frac{Ast\ single\ bar}{Ast\ provid} \times b$

$\frac{78.53}{392.69} \times 1000 = 200.006\ mm$

Adopt.

2) 3d

$3 \times 160 = 620\ mm$

3) 300 mm

Provide the 10 mm bar to 200 mm center to center distance.

VII Ast calculation for longer span.

$$Ast = 0.5 \frac{fck\ bd}{fy} \left[1 - \sqrt{1 - \frac{4.6\ Mu_y}{fck\ bd^2}}\right]$$

$$= 0.5 \times \frac{20 \times 1000 \times 140}{415} \left[1 - \sqrt{1 - \frac{4.6 \times 12.23 \times 10^6}{20 \times 1000 \times 140^2}}\right]$$

$= 251.66\ mm^2$

$d_1 = 120$

Assume 8 mm ϕ bar

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: I Date:

Name of Student: Chavan Rathmesh Laxman

Class: TY. Civil. Division: A

Roll No.: 20. Subject: DCS-I

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

No. of bar = $\frac{251.49}{\pi/4\ 8^2}$

= 5.002

≈ 6 No. of bar

Ast provid = $6 \times \pi/4\ 8^2$

= 301.59 mm^2

VIII Spacing calculation.

$\frac{1}{5}$ $\frac{\text{Ast Singl bar}}{\text{Ast pro}} \times 1000$

= $\frac{\pi/4\ 8^2}{301.59} \times 1000$

= 166

≈ 170 mm adopt

3) Ast
3×160 = 480 mm

300 mm

provide 8 mm ϕ 6y @ 150 mm
center to center

IX) Checks
Deflection check

$\tau_v = \frac{V_u}{bd}$

$V_u = \frac{w_u l^2}{8} = \frac{12.75 \times 6.4^2}{8} = \frac{27.3 \times 20.39}{20.39}$

$\tau_v = \frac{27.3 \times 10^3 \times 20}{1000 \times 160}$ $\frac{20.39}{1000 \times 160}$

$\tau_v = 1.885 \times 10^{-4}$

$p_t = \frac{A_s}{bd} 100 = \frac{392.59}{1000 \times 160} \times 100 = 0.28\ \%$

$p_t = 0.28/2 = 0.14$

$\tau_c = 0.28$

$\tau_v < \tau_c$

development chelf

$$ld = \frac{\phi \sigma_c}{4 \tau_{bd}}$$

$\sigma_c = 0.87 f_{ck}$

$= 17.4$

$\tau_{bd} = 1.92$

$$ld = \frac{10 \times 17.4}{4 \times 1.92}$$

$ld = 22.65$ mm

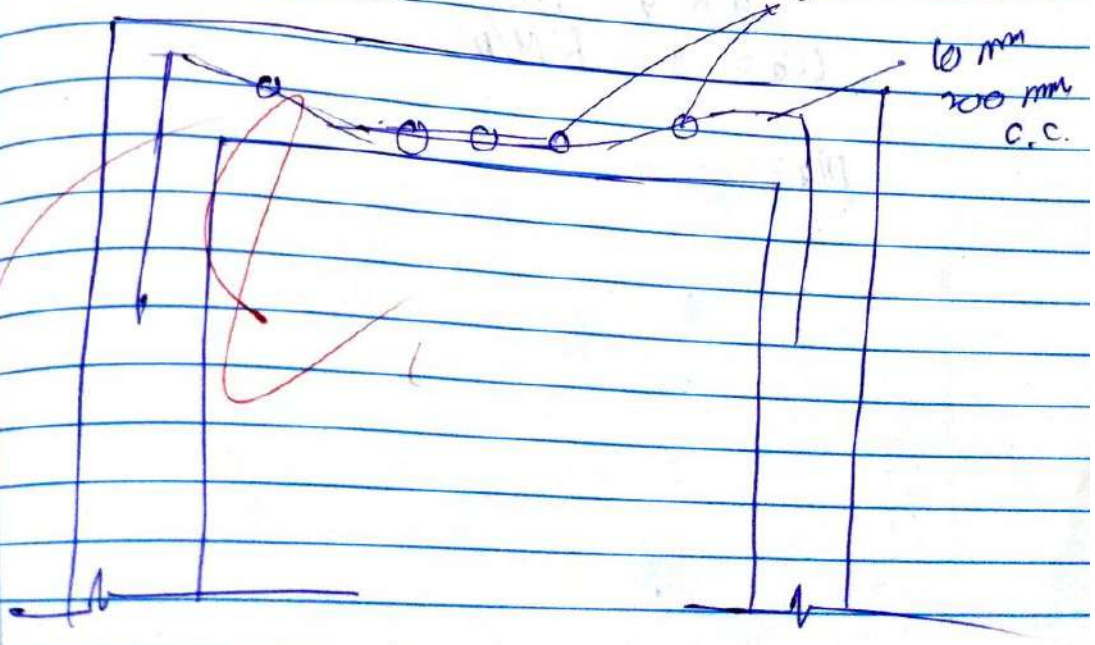
$$ld < 1.3 \left[\frac{M_1}{V_a} + l_0 \right]$$

$$M_1 = \frac{16.32}{2} = 8.16$$

$$ld < 1.3 \left[\frac{8.16}{20.39} + 160 \right]$$

≤ 182.40

$$ld < 1.3 \left(\frac{M_1}{V_a} + l_0 \right)$$



Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: ISE - I Date: 22/9/23

Name of Student: Aghav sayli vijay

Class: T.Y Division: A

Roll No.: 01 Subject: OCS - I

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC1	2	2.1.2	1	1	1					02
CESSC2	2	2.1.2	2	1	0					01
CESSC1	3	2.1.2	3	1/2	02	02				05
CESSC2	3	3.1.1, 3.2.1, 3.3.1	4	08						08
			5							
			6							
			7							
			8							
									Grand Total	16/20

Q.1)

1) a) 1.5

2) a) 48 KN.

Q.2

1) a) 18.1 KN.m

2) d) 2.5

3

Q4. 3)

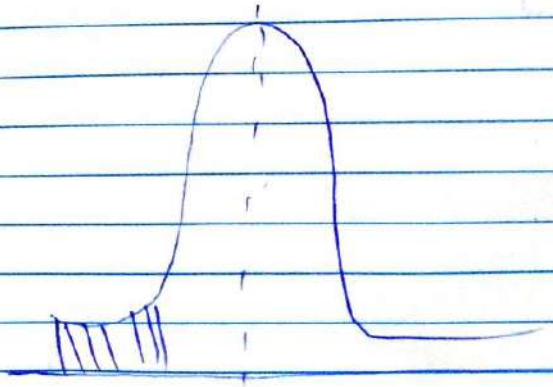
1)

⇒ It is the ratio of partial safety fa characteristic strength to the factor of safety.

2)

⇒ The term characteristic load means that value of load which has 95 % probability of not being exceeded during the life of structure

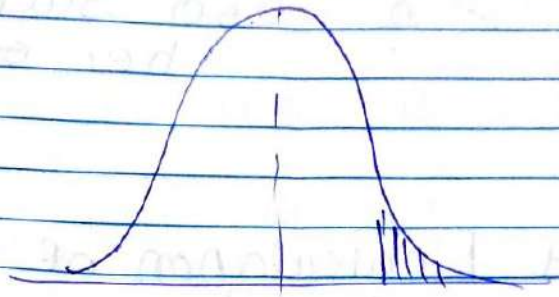
Data are not available to express loads in statistical terms. For that purpose of standard, dead load is given in IS 875 (part I) live load is given in IS 875 (part - II) wind load is given in IS 875 (part - III) snow load as given in IS 875 (part - 4) & seismic force given in IS 1893 shall be assumed as characteristic loads.



(3)

=) The term characteristic strength means that value of strength of material below which not more than 5 % of test result are expected to fall. ~~the~~ Chara

The characteristic value shall be assumed as min. yield stress / 0.2 percent proof stress. specified in the relevant Indian standard specification.



Qu. 4)

→ Given

span = 4m x 3m
beam = 300 mm
LL = 4kN/sq.m
FF = 1kN/sq.m
fck = 20
fy = 415

① $\frac{Ly}{Lx} = \frac{4}{3} = 1.25$

$\frac{Ly}{Lx} < 2$ so slab will be ~~one~~ two

① Step - 1 [calculation of effective depth]

$\frac{span}{d} = 20 \times mf$

$fs = 0.58 \times fy \times \frac{Ast\ req}{Ast\ provided}$

$= 0.58 \times 415$

$fs = ~~323.7~~ 240.7 \approx 240.$

Assume % of steel = 0.9%.

$mf = 1.45.$

From fig No. 4, of IS 456: 2000 page No 38.

$\frac{4000}{d} = 20 \times 1.4s$

$\frac{4000}{20 \times 1.4s} = d$

$d = 197.99$ mm

Assume $\phi = 10$ mm

$D = d + \frac{\phi}{2} + C.C.$

$= 197.99 + \frac{10}{2} + 15$

$= 157.99$

$D = 160$ mm

$Dd = 160 - \frac{\phi}{2} - 15$

$= 160 - 5$

$Dx = 140$

$Dy = Dx - \phi$

$= Dx - 10$

$Dy = 130$ mm

② calculation of effective span

① for shorter edge

① clear span + dx.

$4 + 0.140$

$= 4.14$

② clear span + $\frac{\text{bearing}}{2} + \frac{\text{bearing}}{2}$

$4 + \frac{0.3}{2} + \frac{0.3}{2} = 4.3$

Adopt min from above.

i.e. 4.14. — ①

② for longer span

① effective span + dy

$5 + 0.130$

$= 5.13$ m

② clear span + $\frac{\text{bearing}}{2}$ + $\frac{\text{bearing}}{2}$

$5 + \frac{0.30}{2} + \frac{0.3}{2}$

$= 5.0$ m

Adopt min from above

i.e. 5.13 m — ②

④ Step - 4 calculation of loads

① Dead load = D x g

$= 0.160 \times 25$

$= 4$ kN/sq.m

② LL = 4 kN/sq.m

③ FF = 1 kN/sq.m

Total load = DL + LL + FF

$= 4 + 4 + 1$

$= 9$ kN/sq.m

ultimate load = 1.5 × total load
= 1.5 × 9
Wu = 13.5 kN/m

⑤ Step - 5 B.M calculations.

$\frac{l_y}{l_x} = \frac{5.19}{4.14} = 1.25$

$= 1.2$

$\alpha_x = 0.072$
$\alpha_y = 0.56$
from table No. 26 IS 456 : 2000
page No. 81

$M_x = \alpha_x \times W_u \times l_x^2$
$= 0.072 \times 13.5 \times 4.14^2$
$= 16.65$ kN.m.

$M_y = \alpha_y \times W_u \times l_x^2$
$= 0.056 \times 13.5 \times 4.14^2$
$= 12.95$ kN.m.

⑥ Step - 6
Steel calculation.

$= \frac{f_{ck}}{100} \frac{A_{st req}}{bd}$

$= 100 \times$

(6) step - 6

$$M_m = M_R$$

$$16.69 \times 10^6 = 0.138 \times f_{ck} \, b \, d \, x^2$$

$$16.69 \times 10^6 = 0.138 \times 20 \times 1000 \times x^2$$

$$dx^2 = \frac{16.69 \times 10^6}{0.138 \times 20 \times 1000}$$

$$dx = 77.66 \text{ mm.}$$

$d_{req} < d_{provided}$

Hence safe.

(5) step - 7 Ast calculation

$$A_{st} = \frac{0.78 \times f_{ck} \times b \, d \times}{f_y} \left[1 - \sqrt{1 - \frac{4.6 \, M_u}{f_{ck} \, b d^2}} \right]$$

$$= \frac{0.78 \times 20 \times 1000 \times 146}{415} \left[1 - \sqrt{1 - \frac{4.6 \times 16.69 \times 10^6}{20 \times 1000 \times 146^2}} \right]$$

$$= 3262.65 \times 0.102$$

$A_{st\,prov} = 536.79 \text{ mm}^2$.

$A_{st\,req} = 542.02 \text{ mm}^2$.

No. of bars = $\frac{A_{st\,provided}}{\text{Area of single bar.}}$

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: ISE-1 Date: 22/9/23

Name of Student: Ashish sayli vijay

Class: T.T Division: A

Roll No.: 01 Subject: DCS-I

Sign of Supervisor.: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

(17) Assume 10 mm bar dia.

$$Ast = \frac{\pi}{4} \times 10^2$$

$$= 78.50 \text{ mm}^2$$

$$\text{No. of bar} = \frac{542.02}{78.53}$$

$$= 6.9 \approx 7 \text{ bars}$$

Ast provided = No. of bar x Area of 1 bar

$$= 7 \times 78.53$$

$$= 549.71$$

Spacing calculation

$$= \frac{\text{Area of single bar} \times b}{\text{Ast provided}}$$

$$= \frac{78.53}{549.71} \times 1000$$

$$= 142.8 \simeq$$

140 mm

Steel calculations

$$A \quad 100 \frac{\text{Ast provided}}{bd}$$

$$= \frac{100 \times 549.71}{1000 \times 140}$$

$$= 0.3$$

Ast calculations

$$Ast = \frac{0.5 f_{ck} \times b \times d}{f_y} \times \left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} b d^2}}\right]$$

$$= \frac{0.5 \times 20 \times 1000 \times 140}{415} \times \left[1 - \sqrt{1 - \frac{4.6 \times 12.95 \times 10^6}{20 \times 1000 \times 140^2}}\right]$$

Ast req. 266.88

Assume $\phi = 8$ mm

No. of bars $= \frac{\text{Ast req}}{\text{Area of single bar}}$

$$= \frac{266.88}{\frac{\pi}{4} \times (8)^2} = 5.3 \Rightarrow 6 \text{ bars}$$

Ast provided = No. of bar × Area of 1 bar

$= 6 \times \frac{\pi}{4} \times (8)^2$

$= 301.39 \text{ mm}^2$

(5) Step - 8 (tension reinforcement)

(6) Step - 9 Checks

(1) Check for shear

$\tau v = \frac{Vu}{bd}$

$Vu = \frac{w l_{eff}}{2} = \frac{13.9 \times 10^6 \times 4.14}{2}$

$= 822.90$

$\tau v = 0.009$

$\tau c = 0.28$

$\tau v < \tau c$ Hence safe.

From table 19 clause clause 40.2.1, Page 73 IS 456:2000

(2) Check for deflection

$\frac{span}{d} = 20 \times mf$

$\frac{4000}{d} = 20 \times mf$

$ms = 0.58 \times fy \times \frac{Ast\ req}{Ast\ prov}$

$= 0.58 \times 420 \times \frac{542.02}{549.71}$

$= 237.99$

≈ 240 m

$\frac{\text{span}}{d} = 20 \times 1.5$

$\frac{4000}{20 \times 1.5} = d$

dreq = 133.33

dprov = 140.

Hence safe.

(3) check for l_0

$l_0 = \frac{\phi \sigma_s}{42 \beta_b d}$

$\phi = 10$ mm

$\beta_b d = 1.92$

$\sigma_s = 0.87 f_y$

$= 0.87 \times 415$

$l_0 = \frac{10 \times 361.05}{4 \times 1.92} = 420.117$

$l_0 < 1.3\left(\frac{M_1}{V} - l_0\right)$

$M_1 = \frac{M_u}{2} = \frac{16.65}{2} = 8.325$

$V = 27.94$

$l_0 < 420.117$

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: ISE - I Date.:

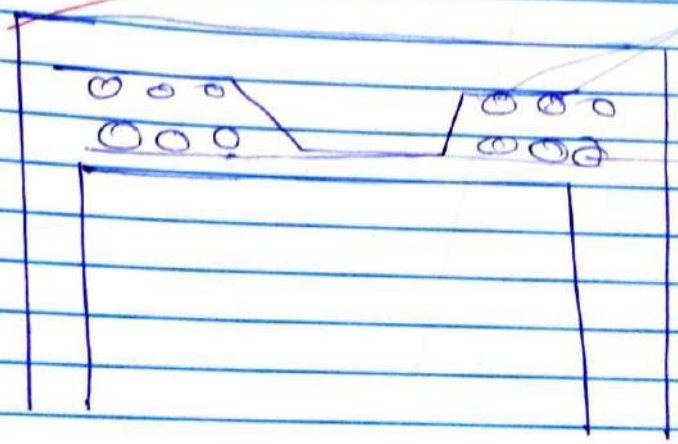
Name of Student.: Ashwil Gayki Vijay.

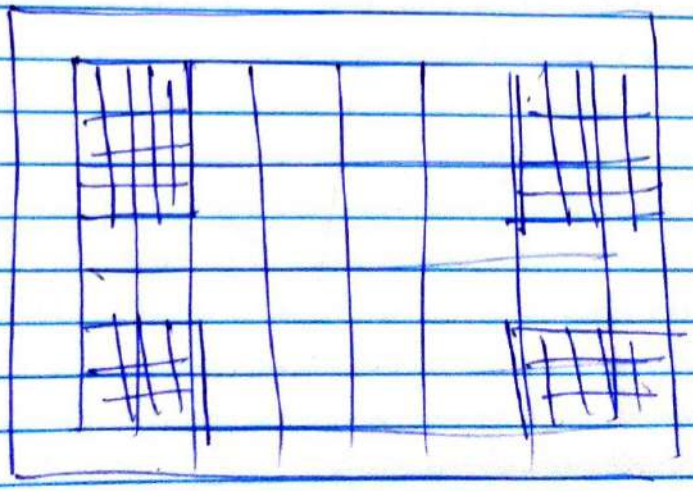
Class.: T.Y Division.: A

Roll No.: 01 Subject.: DCS - I

Sign of Supervisor.: Marks.:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	





Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: 01 Date.: 22/9/2023

Name of Student: Vishwajeet Sanjay Ghadge

Class.: T.Y. Division: A

Roll No.: 23 Subject: DCS - I

Sign of Supervisor: 22/09/23. Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC1	2	2.1.2	1	1	1					02
CESSC2	2	2.2.1	2	1	1					02
CESSC1	3	2.1.2	3	0	02	02				04
CESSC2	3	3.1.2.2 3.2.1 3.3.1	4							
			5							
			6							
			7							
			8							
									Grand Total	08/20

Q1.) MCQ's.

1. → a.)

2. → a.)

Q2.) MCQ's.

1.) → a.)

2. → a.)

Q.3) Explain the following.

1)

2.)

→ Characteristics Load :-

The term "characteristics load" means that value of load which has a 95% probability of not being exceeded during the life of the structures.

Since data are not available to express loads in statical terms, for the purpose of this standard, dead loads given in IS 875 (Part 1), imposed loads given in IS 875 (Part 2), wind loads given in IS 875 (Part 3) snow load as given in IS 875 (Part 4) and seismic forces given in IS 1893 shall be assumed as the characteristics loads.

3.)

→ characteristics strength :-

The term "characteristic strength" means that value of the strength of the material below which not more than 5% of the test results are expected to fall. The characteristic strength for concrete shall be in accordance with Table 2. Until the relevant Indian standard specifications for reinforcing steel are modified to include the concept of characteristic strength, the characteristic value shall be assumed as the mini. yield stress / 0.2 % proof stress specified in the relevant IS specifications.

Date: 31-09-2023

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: ISE-2
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.3	CE55C.4	CE55C.3	CE55C.4	CE55C.3			CE55C.4		
			Max. Marks	2	2	8	8						
			Q. No. / Total Obtained Marks	Q1	Q2	Q3	Q4	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
2.02101E+14	211CE11008	SAYLI VIJAY ASHTUL	12	1	2	7	2	10	8	80.00	10	4	40.00
2.02201E+14	221CE12003	AISHWARYA ROHIDAS CHAVAN	9	0	2	3	4	10	3	30.00	10	6	60.00
2.02101E+14	211CE11029	NAMRATA DINKAR CHAVARE	9	0	2	5	2	10	5	50.00	10	4	40.00
2.02101E+14	211CE11023	SANIKA GAJANAN DESHMUKHE	14	1	1	4	8	10	5	90.00	10	9	90.00
2.02201E+14	221CE12024	KAJAL SHRAVAN KAMBLE	8	1	2	4	1	10	5	50.00	10	3	30.00
2.02101E+14	211CE11019	PRIYANKA PRATAP KARANDE	13	1	2	4	6	10	5	50.00	10	8	80.00
2.02101E+14	211CE11025	RUTUJA MAHESH KAWADE	2	0	1	1	0	10	1	10.00	10	1	10.00
2.02201E+14	221CE12022	PRIYANKA IRANNA KOLI	12	0	2	7	3	10	7	70.00	10	5	50.00
2.02101E+14	211CE11026	AISHWARYA PRADIP KUMBHAR	10	1	2	2	5	10	3	30.00	10	7	70.00
2.02101E+14	211CE11018	DIVYA RAJENDRA LATAKE	18	1	2	8	7	10	9	90.00	10	9	90.00
2.02101E+14	211CE11005	AAKANKSHA JAGANNATH MANE	19	1	2	8	8	10	9	90.00	10	10	100
2.02101E+14	211CE11012	POOJA DADASAHEB NAGANE	9	0	2	1	6	10	1	10.00	10	8	80.00
2.02101E+14	211CE11022	SNEHAL NAVNATH RONGE	11	0	2	5	4	10	5	50.00	10	6	60.00
2.02101E+14	211CE11010	ALVIRA AMIN SHAIKH	2	0	2	0	0	10	0	NA	10	2	20.00
2.02101E+14	211CE11032	ANISHA AMAR SURVASE	8	0	2	2	4	10	2	20.00	10	6	60.00
2.02201E+14	221CE12038	SHIVALINGAMMA CHANDRAKANT TENGALE	10	2	1	2	5	10	4	40.00	10	6	60.00
2.02101E+14	211CE11014	RAMESH BAPU BANDGAR	5	0	1	0	4	10	0	NA	10	5	50.00
2.02101E+14	211CE11004	AJAY BHAGWAT BANSODE	10	2	2	2	4	10	4	40.00	10	6	60.00
2.02101E+14	211CE11031	PRATHMESH LAXMAN CHAVAN	15	2	2	5	6	10	7	70.00	10	8	80.00
2.02101E+14	211CE11030	SWARUP RAJARAM CHAVAN	12	0	1	3	8	10	3	30.00	10	9	90.00
2.02101E+14	211CE11011	SWAPNIL MAHADEV DHULAGUDE	8	0	1	0	7	10	0	NA	10	8	80.00
2.02101E+14	211CE11007	VISHWAJEET SANJAY GHADGE	10	1	2	0	7	10	1	10.00	10	9	90.00
2.02201E+14	221CE12040	SAMARTH PRAKASH HIPPARGI	13	0	1	5	7	10	5	50.00	10	8	80.00

2.02101E+14	211CE11021	VITTHAL SAINATH HOTKAR	7	1	1	5	0	10	6	60.00	10	1	10.00
2.02101E+14	211CE11017	PRATIK DADA KARE	7	1	1	5	0	10	6	60.00	10	1	10.00
2.02101E+14	211CE11028	ABHIJIT ASHOK KHALADKAR	10	1	1	5	3	10	6	60.00	10	4	40.00
2.02201E+14	221CE12035	SANKET CHANDRAKANT LENDAVE	17	2	2	5	8	10	7	70.00	10	10	100
2.02101E+14	211CE11013	GOPAL DATTA MADANE	7	0	1	0	6	10	0	NA	10	7	70.00
2.02201E+14	221CE12045	RAHUL MANAGENI MASHALE	11	0	1	3	7	10	3	30.00	10	8	80.00
2.02101E+14	211CE11003	TUKARAM SHANKAR METAKARI	10	0	1	6	3	10	6	60.00	10	6	60.00
2.02201E+14	221CE12015	AVINASH SHARANAPPA NILGAR	13	0	1	7	5	10	7	70.00	10	6	60.00
2.02201E+14	221CE12021	VIGHNAHAR SHARAD NILGAR	13	2	1	8	2	10	10	100	10	3	30.00
2.02201E+14	221CE12005	ABHISHEK SURESH NIMBAL	15	2	1	8	4	10	10	100	10	5	50.00
2.02201E+14	221CE12051	YASH SATISH NIMBALKAR	2	1	1	0	0	10	1	10.00	10	1	10.00
2.02201E+14	221CE12058	MAHESH LAXMAN PADVALE	2	1	1	0	0	10	1	10.00	10	1	10.00
2.02101E+14	211CE11027	OM VIVEKANAND PATIL	3	1	1	1	0	10	2	20.00	10	1	10.00
2.02101E+14	211CE11015	RAJ MOHAN RONGE	2	0	1	0	1	10	0	NA	10	2	20.00
2.02101E+14	211CE11002	AKASH SUBHASH SHEGAR	3	0	1	1	1	10	1	10.00	10	2	20.00
2.02101E+14	211CE11009	DATTATRAY MARUTI SHEJAL	2	0	1	0	1	10	0	NA	10	2	20.00
2.02101E+14	211CE11024	YUVRAJ SITARAM SHINDE	4	0	1	0	3	10	0	NA	10	4	40.00
2.02201E+14	221CE12047	SURESH BHIMANNA SUNAGAR	8	0	1	4	3	10	4	40.00	10	4	40.00
2.02201E+14	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	20	2	2	8	8	10	10	100	10	10	100
2.02201E+14	221CE12039	SHRAVAN SURYAKANT WAGHAMODE	9	0	1	4	4	10	4	40.00	10	5	50.00

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C3	CE55C4
No. of Students achieving Target Level	14	21
No. of Applicable Students	43	43
% Students achieving Target Level	32.56	48.84
Attainment	0	0

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: II Date: 20/10/23

Name of Student: Bheemashankar. P Tukamali

Class: TY Division: A

Roll No.: 43 Subject: DCS - I.

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC3	2	2.1.2	1							02
CESSC4	2	2.2.2	2							02
CESSC3	4	2.1.1, 2.1.2, 3.1.1, 3.1.2, 3.2.1	3	08						08
CESSC4	4	2.1.1, 2.1.2, 3.1.1, 3.1.2, 3.2.1	4	08						08
			5							
			6							
			7							
			8							
									Grand Total	20/20

Q.1)

1)

→ d)

2)

→ a)

Q. 2)

1) → c)

2) → d)

Q.3)

1)

→ Given :-

bearing = 250 mm

Span = 5.8 m

b = 300 mm

G.L = 12 kN/m

Fc/c = 20 mpa

Fy = 415 mPa

1) Calculate depth of splab

$$\frac{\text{span}}{d} = 10$$

$$\frac{5800}{d} = 10$$

$$d = 580\text{mm}$$

$$D = d + d' \quad (d' = 50\text{mm})$$
$$= 580 + 50$$
$$= 630\text{mm}.$$

2) Calculate effective span

1) span + d = 5.8 + 0.58 = 6.38 m

2) Span + bearing = 5.8 + 0.25 = 6.05 m } min

Leff = 6.05m.

3) Load calⁿ.

dead load = b × D × ρ
= 0.3 × 0.63 × 25
= 4.72 kN/m

L.L = 12 kN/m

Total load = DL + LL
= 4.72 + 12
= 16.72 kN/m

Ultimate load = 1.5 × 16.72
= 25.08 kN/m.

4) moment calⁿ.

$$Mu = \frac{wl^2}{8} = \frac{25.08 \times 6.03^2}{8}$$

Mu = 113.99 kN.m.

5) Mulimit = 0.138 × Fck bd²
= 0.138 × 20 × 300 × 580²
Mulimit = 278.53 kN.m

Mu < Mulimit - So design beam is singly.

5) Steel calculation

$$Ast = \frac{0.5 Fck\ bd^2}{fy}\left[1 - \sqrt{1 - \frac{4.6\,Mu}{Fck\,bd^2}}\right]$$

$$= \frac{0.5 \times 20 \times 300 \times 580}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 113.99 \times 10^6}{20 \times 300 \times 580^2}}\right]$$

Ast = 585.54 mm²

Assume, dia of bar = 20mm

Ast of single bar = $\frac{\pi}{4} \times 20^2 = 314.15 \text{ mm}^2$

No. of bars = $\frac{585.54}{314.15} = 1.86 \approx 2 \text{ nos.}$

Ast provide = $2 \times 314.15 = 628.33$

$$pt = \frac{100 \times \text{Ast provide}}{bd}$$

$$= \frac{100 \times 628.33}{300 \times 580}$$

$pt = 0.36\%$

6) Take checks.

a) for shear

$$\tau v = \frac{Vu}{bd}$$

$$Vu = \frac{wL}{2} = \frac{25.08 \times 6.03}{2} = 75.64 \text{ kN.}$$

$$\tau v = \frac{75.64 \times 10^3}{300 \times 580} = 0.43 \text{ mpa.}$$

$\tau c = ?$

$$Pt = \frac{0.36}{2} = 0.18\%$$

from IS456 P.N - 73 T.N - Table No - 19

Pt		τ_c
0.15	-	0.28
0.18	-	?
0.25	-	0.36

$\tau_c = 0.30$

$\tau_v \not< \tau_c$ Not safe.

Shear R/F requirement

Unbalance shear calculation

$V_{us} = (\tau_v - \tau_c) bd$

$= (0.43 - 0.3) 300 \times 580$

$V_{us} = 22.62$ kN.

Assume 2-legged 8ϕ stirrups is provided

$A_{sv} = \frac{2 \times \pi}{4} \times 8^2 = 100.53$

1) $V_{us} = \frac{0.87 f_y A_{sv} d}{S_v}$

$S_v = \frac{0.87 \times 415 \times 100.53 \times 580}{22.62 \times 10^3}$

$S_v = 930.67$ mm $\approx$ 930 mm

2) $0.75d = 0.75 \times 580 = 435$ mm

3) 300 mm

Provide 2 legged 8mmϕ stirrups @ 300 mm center to center

9

2) deflection check.

$fs = 0.58 \times fy \times \frac{Ast\,req}{Ast\,provide}$

$= 0.58 \times 415 \times \frac{585.54}{628.33}$

$fs = 224.33\ mpa \approx 240\ mpa$

$pt = 0.18\%$

~~$Fc = 1.81$~~ $MF = 1.8$

$\frac{span}{d} = 20 \times MF$

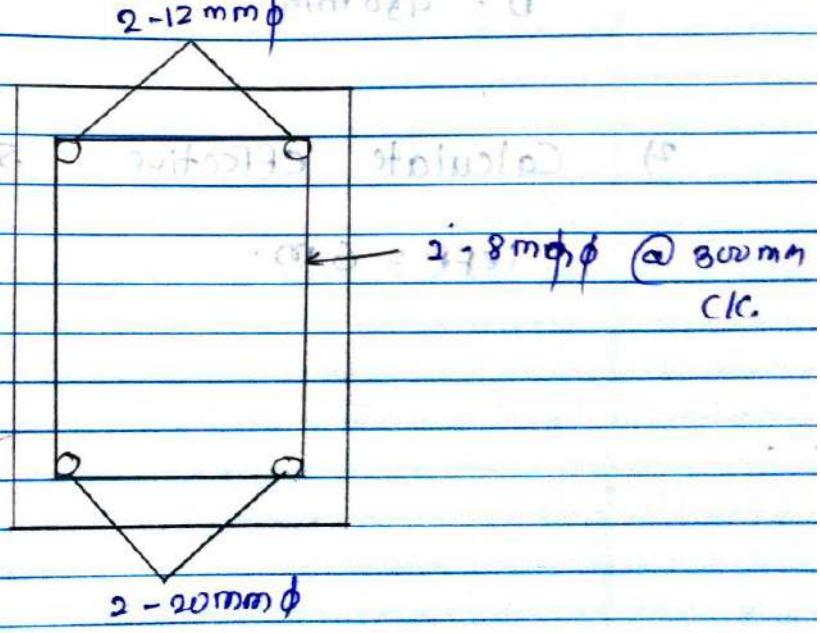
$\frac{6030}{20 \times 1.8} = d$

$d_{req} = 167.5\ mm$

$d_{provide} = 580\ mm$

$d_{req} < d_{provide}$ — Hence ok

3) R/F detail.



(Q.4)

Given:-

leff = 6m

D.L = 10 kN/m

L.L = 15 kN/m

fck = 25 mpa

fy = 500 mpa.

1) depth calculation

$$\frac{span}{d} = 15$$

$$\frac{6000}{15} = d$$

d = 400 mm

D = d + d' (d' = 50 mm)

= 400 + 50

D = 450 mm

2) Calculate effective span

leff = 6 m.

3) Load calculation.

$w_d = 10 kN/m$ (including self wt)

$w_{du} = 1.5 \times 10 = 15 kN/m$

$w_{udl} = 15 kN/m$

$w_{udlu} = 1.5 \times 15 = 22.5 kN/m.$

4) moment calculation.

for span.

a) Near to middle end support (AB, CD)

$$m_u = \frac{1}{12} \times 15 \times 6^2 + \frac{1}{10} \times 22.5 \times 6^2$$

$m_u = 126 kN.m$

b) At middle of interior span (BC)

$$m_u = \frac{1}{16} \times 15 \times 6^2 + \frac{1}{12} \times 22.5 \times 6^2$$

$m_u = 101.25 kN.m$

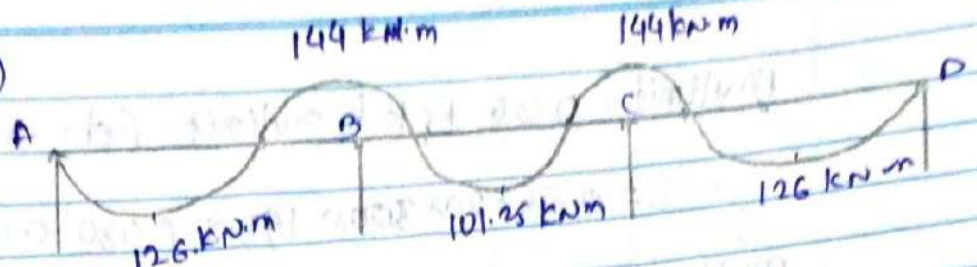
for support

a) At support next to the end support

$$m_u = \frac{-1}{10} \times 15 \times 6^2 + \left(-\frac{1}{9} \times 22.5 \times 6^2\right)$$

$m_u = -144 kN.m$

Hogging



Sagging.

max. Hogging $mu = 144\ kN.m$

max Sagging $mu = 126\ kN.m$

equate $BM = MR$

$$mu = 0.133\ fck\ bd^2$$

$$144 \times 10^6 = 0.133 \times 20 \times 300 \times d_{req}^2$$

$d_{req} = 424.79\ mm \simeq 430\ mm$

$d_{provide} = 400\ mm$

provide 'd' $= 430\ mm$

$D = d + d'$ $\quad (d' = 50mm)$

$= 430 + 50$

$D = 480\ mm$

beam size $= b \times D$

$= 300 \times 480\ mm.$

$$\frac{x_{u\,limit}}{d} = 0.46$$

$x_{u\,limit} = 430 \times 0.46$

$x_{u\,limit} = 197.8\ mm.$

$mu_{limit} = 0.36\, f_{ck}\, b\, x_{u\,limit}\,(d - 0.42\, x_{u\,limit})$

$= 0.36 \times 20 \times 300 \times 197.8\,(430 - 0.42 \times 197.8)$

$mu_{limit} = 148.22$ kN.m

$mu = 144$ kN.m

$mu < mu_{limit}$ - so design beam is singly.

3) Ast calculation for Hogging

$$Ast = \frac{0.5 f_{ck}\, bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6\, mu}{f_{ck}\, bd^2}}\right]$$

$$= \frac{0.5 \times 20 \times 300 \times 430}{500}\left[1 - \sqrt{1 - \frac{4.6 \times 144 \times 10^6}{20 \times 300 \times 430^2}}\right]$$

$Ast = 942.31\ mm^2$

Assumme dia of bar = 20 mm

Ast of single bar = $\frac{\pi}{4} \times 20^2 = 314.15\ mm^2$

No. of bars = $\frac{942.31}{314.15} = 2.99 \approx 3$ Nos

Ast provided = $3 \times 314.15 = 942.45\ mm^2$

$$Pt = \frac{100 \times Ast\ provided}{bd}$$

$$= \frac{100 \times 942.45}{300 \times 430}$$

$Pt = 0.73\%$

For sagging.

$$Ast = \frac{0.5\, fck\, bd}{fy}\left[1 - \sqrt{1 - \frac{4.6\, M_u}{fck\, bd^2}}\right]$$

$$= \frac{0.5 \times 20 \times 300 \times 430}{500}\left[1 - \sqrt{1 - \frac{4.6 \times 126 \times 10^6}{20 \times 300 \times 430^2}}\right]$$

$Ast = 797.08\ mm^2$

Assume dia. of bar = 20 mm

Ast of single bar $= \frac{\pi}{4} \times 20^2 = 314.15\ mm^2$

No. of bars $= \frac{797.08}{314.15} = 2.53 \approx 3.$

Ast provided $= 3 \times 314.15 = 942.45\ mm^2$

$$pt = \frac{100 \times Ast\ provide}{bd}$$

$$= \frac{100 \times 942.45}{300 \times 430}$$

$pt = 0.73\%$

6) Take checks

a) Check for Shear

$$\tau_v = \frac{V_u}{bd}$$

V_u = Shear force.

a) At end support (A & D)

$V_u = 0.4 \times 15 \times 6 + 0.45 \times 22.50 \times 6$

$V_u = 96.75$ kN.

b) At support next to the end support.

a) Outer side. (B_L & C_R)

$V_u = 0.6 \times 15 \times 6 + 0.6 \times 22.5 \times 6$

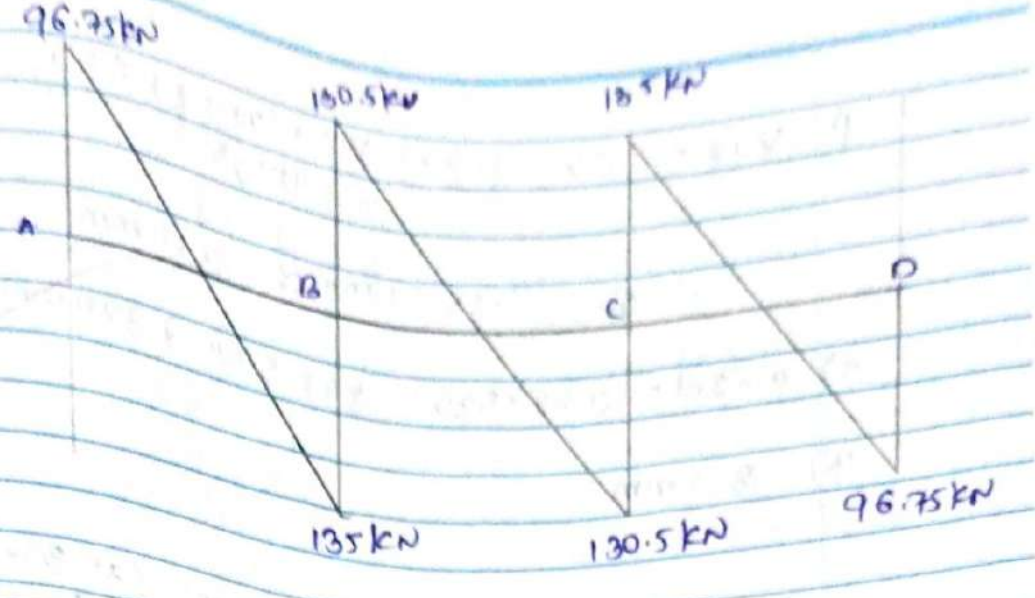
$V_u = 135$ kN

b) Inner side (B_R & C_L)

$V_u = 0.55 \times 15 \times 6 + 0.6 \times 22.5 \times 6$

$V_u = 130.5$ kN.

max $V_u = 135$ kN.



$\tau_v = \frac{135 \times 10^3}{300 \times 430} = 1.04$ mpa

$\tau_c = ?$

$p_t = 0.73$

p_t		τ_c
0.50	-	0.57
0.73	=	?
0.75	-	0.64

$\tau_c = 0.634$

$\tau_v \nleq \tau_c$ - not safe

Shear R/F requirment

$V_{us} = (\tau_v - \tau_c) b d = (1.04 - 0.63)\ 300 \times 430 = 52.89$ kN

calculate unbalance shear

$$V_{us} = \frac{0.87 f_y A_{sv} d}{S_v}$$

$A_{sv} = 2 \times \frac{\pi}{4} \times 8^2 = 100.53\ mm^2$

1) $V_{us} = S_v = \frac{0.87 \times 500 \times 100.53 \times 430}{52.89 \times 10^3}$

$S_v = 355.53\,mm \approx 350\,mm$

2) $0.75d = 0.75 \times 430 = 322.5\,mm \approx 320\,mm$

3) 300 mm.

Provide 2 legged 8 mmϕ stirrups @ 300 mm c/c

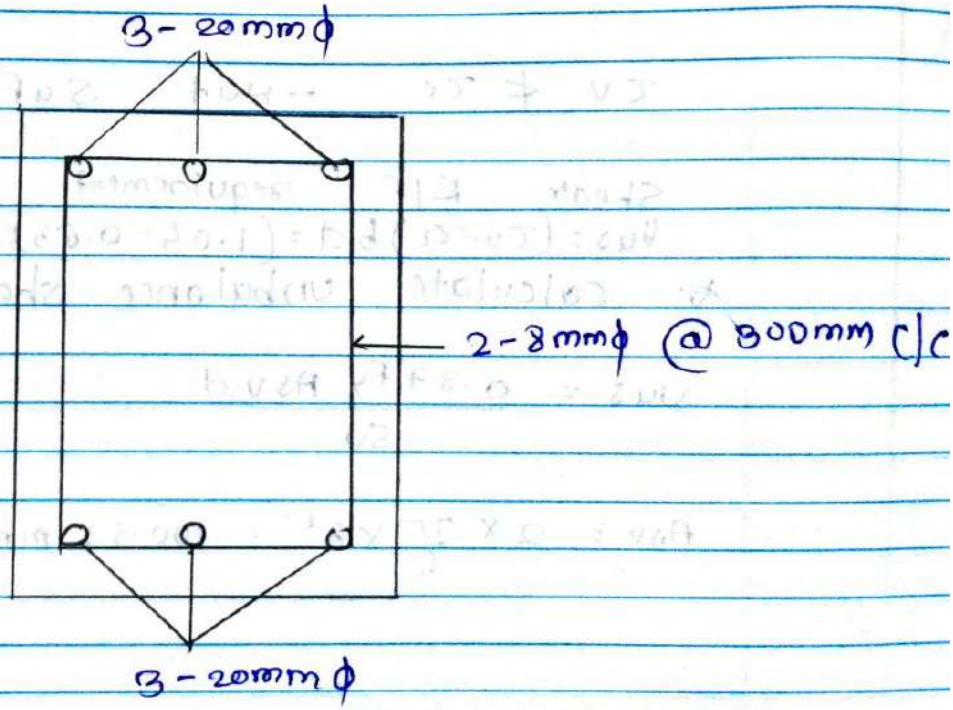
2) deflection check

$\frac{L}{d} < 26$

$\frac{6000}{430} < 26$

$13.95 < 26$ — Hence ok.

3) RF detail.



Q.4)

2)

→ Given:-

DF = 120mm
b = 300mm
d = 580mm
Span = 8m
8 - 20mm ϕ
fck = 20 mPa
fy = 415mp
Span = 3.6m.

→1) Calculate depth of slab.

$$\frac{\text{Span}}{d} = 10$$

$$\frac{3600}{d} = 10$$

dreq = 360mm
dprovide = 580mm

D = 580 + 50 = 630mm

2) Calculate effective span

1) span + d = 3.6 + 0.58 = 4.18m

2) span + bearing - (bearing = 250mm)

3.6 + 0.25

= 3.85mm

LEFF = 3.85 m.

3) load cal?.

1) for Dead load

a) for flange.

= 3.6 × 0.12 × 25

= 10.8 kN/m

b) for web.

= 0.3 × 0.51 × 25

= 3.82 kN/m

2) L.L =

1) $Ast = 8 \times \frac{\pi}{4} \times 20^2 = 2513.27\ mm^2$

$bf = \frac{lo}{6} + $

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: II Date: 30/10/2023

Name of Student: Nimbal Abhishek Suresh

Class: TY Division: A

Roll No.: 34 Subject: DCS-I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC3	2	2.1.2	1	1	1					02
CESSC4	2	2.2.2	2	0	1					01
CESSC3	4	2.1.1 3.1.2.3	3	08						08
CESSC4	4	2.1.1 3.1.2.3 3.2.1	4	04						04
			5							
			6							
			7							
			8							
									Grand Total	15/20

Q1] 1] [d]

2] [d]

3] [a]

4] [d]

→ bearing wall = 250mm
l_0 = 5.8 m
b_w = 300 mm
l_d = 12 kN/m
Fy = 415
fck = 20 N/mm²
assume width = b = 230mm

step ① calculate the effective deapth

$$\frac{\text{span}}{d} = 10$$

$$\frac{5800}{d} = 10$$

$$\boxed{d = 580 \text{ mm}}$$

assume effective & Cover = 50mm

$$D = 580 + 50$$

$$\boxed{D = 630 \text{ mm}}$$

step 2] calculate the effective span

① clear span + effective deapth

= 5.8 + 0.58

=

= 6.38 m

② clear span + $\frac{\text{bearing}}{2}$ + $\frac{\text{bearing}}{2}$

= 5.8 + 0.25 + 0.25

= 6.05 m

Adopt = 6.05 m

Steps load calculation -

① Dead load =

= 0.63 × 0.300 × 25

= 4.725 kN/m

② Live load = 12 kN/m

Total load = 12 + 4.725

= 16.725 kN/m

Ultimate load = 1.5 × w

= 1.5 × 16.725

= 25.08 kN/m

4) calculate the bending moment -

$BM = \frac{w l_{ee}^2}{8}$

$= \frac{25.08 \times 6.05^2}{8}$

BM = 114.74 kN.m

MU = 114.74 kN.m

~~$\frac{x_{umax}}{d} = 0.48$~~

$x_{umax} = 0.48 \times 580$

$= 278.4$

$mu_{limit} = 0.138 \times f_{ck} \times bd^2$

$= 0.138 \times 20 \times 300 \times 580^2$

$= 278.53 \text{ kN.m}$

$mu < mu_{limit}$

Hence, beam is singly reinforced beam

step 5] Ast calculation :

$$A_{st} = \frac{0.5 \times f_{ck} \times bd}{f_y} \left[1 - \sqrt{1 - \frac{4.6 \times mu}{f_{ck} bd^2}} \right]$$

$$= \frac{0.5 \times 20 \times 300 \times 580}{415} \left[1 - \sqrt{1 - \frac{4.6 \times 114.74 \times 10^6}{20 \times 300 \times 580^2}} \right]$$

$A_{st} = 589.66 \text{ mm}^2$

assume 16 mm² diameter

Ast of bar = $\frac{\pi}{4} \times 16^2$

$= 201.06 \text{ mm}^2$

No. of bars = $\frac{A_{st}}{\text{ast individual}}$

$= \frac{589.66}{201.06}$

= 2.93

No of bars = 3 NOS

pt calculation = $100 \times \frac{Ast\ provided}{bd}$

= 100 ×

Ast provided = $3 \times \frac{\pi}{4} \times 16^3$

= 603.18 mm^2

Percentage of steel =

= $100 \times \frac{Ast\ provided}{bd}$

pt. = 0.344 %

checks

① check for shear :-

$\tau v = \frac{\tau Vu}{bd}$

$Vu = \frac{wl}{2}$

= $\frac{25.08 \times 6.05}{2}$

Vu = 75.86 kN

$$\tau_v = \frac{72.86 \times 10^6}{300 \times 580}$$

$$\boxed{\tau_v = 0.436}$$

τ_c – Page No. 73. IS code 456: 2000

$$p = \frac{p_t}{2} = \frac{0.344}{2}$$

$$= 0.172$$

0.15	→	0.28
0.172	→	?
0.25	→	0.36

by interpolation

$$\boxed{\tau_c = 0.2976}$$

$\boxed{\tau_v \& \tau_c}$ – No. safe
– To calculate unbalanced shear

$$V_{us} = (\tau_v - \tau_c) \times b d$$

$$= (0.436 - 0.2976) \times 300 \times 580$$

$$\boxed{V_{us} = 24.08 \times 10^3 \text{ N-mm}}$$

To calculate A_{sv}

assume 8d two legged stirrups for torsional resistance

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: II Date: 30/10/23

Name of Student: Nimbal Abhishek Suresh

Class: TY Division: A

Roll No.: 34 Subject: DCS-I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

Q4]

1) Given:

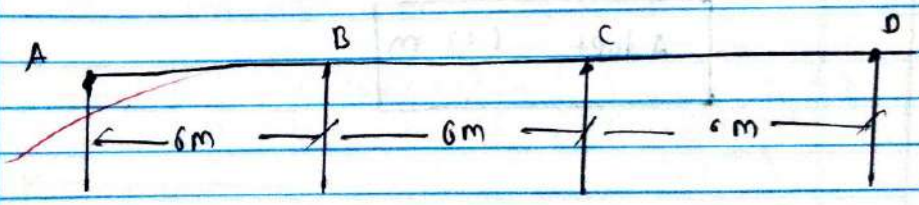
$l_0 = 6m$, LL = 16kN/m

DD = 10kN/m

Fck = 25

Fy = 500 steel

Assume braing wall = 230 mm



step - 1] calculate the effective depth

$\frac{span}{d} = 10$

$\frac{6000}{d} = 10$

$d = 600\ mm$

assume effective cover = 50mm

$D = 650\ mm$

step 2] calculate the effective span.

① clear span + Effective depth

$= 6 + 0.6$

$= 6.6\ m$

② clear span + $\frac{beam}{2} + \frac{beam}{2}$

$= 6 + \frac{0.23}{2} + \frac{0.23}{2}$

$= 6.23\ m$

Adopt 6.23 m

③ step 3] load calculation

$b = 300\ mm$

- Cross section = 300 x 650 mm

① Dead load = 10 kN/m

Self weight = $0.65 \times 0.3 \times 25$

$= 4.875$ kN/m

② Live load = 16 kN/m

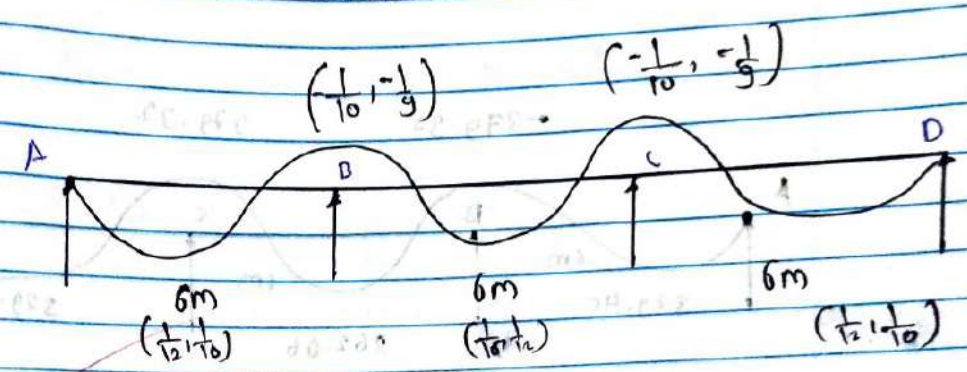
Total load = $16 + 14.875$

$= 30.875$

Ultimate load = 1.5×30.87

$= 46.30$ kN

Step 4] Bm calculation



a] Bm at near middle of end support:

For span AB, CD

$$Bm = \left[\frac{1}{12} \times 46.30 \times 6.23^2\right] + \left[\frac{1}{10} \times 46.30 \times 6.23^2\right]$$

(Dead load only) (Live load only)

$$Bm = 329.45 \text{ kN·m}$$

(2) BM : Bending moment at At middle of interior support BC

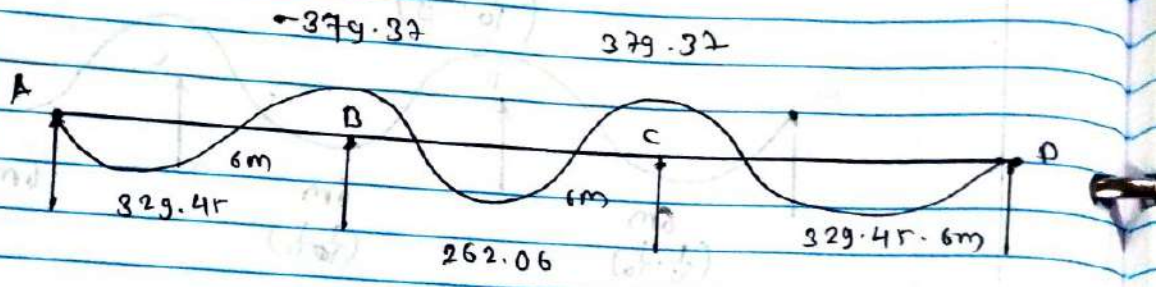
$$BM = \left[\frac{1}{10} \times 46.3 \times 6.23^2\right] + \left[\frac{1}{12} \times 46.3 \times 6.23^2\right]$$

$$BM = 262.06 \text{ kN.m}$$

(3) BM at support at next to the end support. point B, and C

$$BM = \left[-\frac{1}{10} \times 46.3 \times 6.23^2\right] - \left[\frac{1}{9} \times 46.3 \times 6.23^2\right]$$

$$BM = -379.37 \text{ kN.m}$$



(1) maximum Hogging moment = 379.37 kN.m
(2) maximum sagging moment = 262. 329.45 kNm

step 5] Ast calculation: sagging

$$Ast = \frac{0.5 \times fck \times bd}{fy}\left[1 - \sqrt{1 - \frac{4.6 \times M_u}{fck \times b \times d^2}}\right]$$

$0.5 \times 25 \times 300 \times$

$\frac{x_{umax}}{d} = 0.46$

$x_{umax} =$

Ast calculation - sagging

$$Ast = \frac{0.5 \times f_{ck} \times bd}{f_y} \left[0.1 - \sqrt{1 - \frac{4.6 \times M_u}{f_{ck} \times bd^2}} \right]$$

$$= \frac{0.5 \times 25 \times 300 \times 600}{500} \left[1 - \sqrt{1 - \frac{4.6 \times 329.45 \times 10^6}{25 \times 300 \times 600^2}} \right]$$

$Ast = 1519.4 \ mm^2$

assum ϕ of bar = 25

$$Ast = \frac{\pi}{4} \times 25^2$$

$$= 490.87 \ mm^2$$

No. of bar = $\frac{1519.4}{490.87}$

$= 3.09 = 24$

Ast provided = 4×490.87

$= 1963.48 \ mm^2$

Pt calculation = $100 \times \frac{Ast \ provided}{bd}$

=

$= 100 \times \frac{1963.48}{300 \times 600}$

$p_t = 1.09$

A For ~~Har~~ Hogging moment

$$A_{st} = \frac{0.5 \times f_{ck} \times bd}{f_y} \left[1 - \sqrt{1 - \frac{4.6 \times m_u}{f_{ck} \times bd^2}} \right]$$

$A_{sv} = 2 \times \frac{\pi}{4} \times 8^2$

$A_{sv} = 100.53 \text{ mm}^2$

$V_{us} = \frac{0.87 \times f_y \, A_{sv} \, d}{sv}$

$sv = \frac{0.87 \times 415 \times 100.53 \times 580}{24.08 \times 10^3}$

$sv = 874.24 \text{ mm}$ —①

(ii) $0.75 \times d = 0.75 \times 580 = 435 \text{ mm}$

(iii) 300 mm

provide 8 mm ϕ 2 legged stirrups at a distance 300 mm centre to centre distance.

Check for deflection :

$MF = \frac{0.58 \times f_y \times A_{st \text{ required}}}{A_{st \text{ provided}}}$

$= 0.58 \times 415 \times \frac{589.60}{603.18}$

$= 235.30$, $p_t = 0.44$

$MF = 1.1$

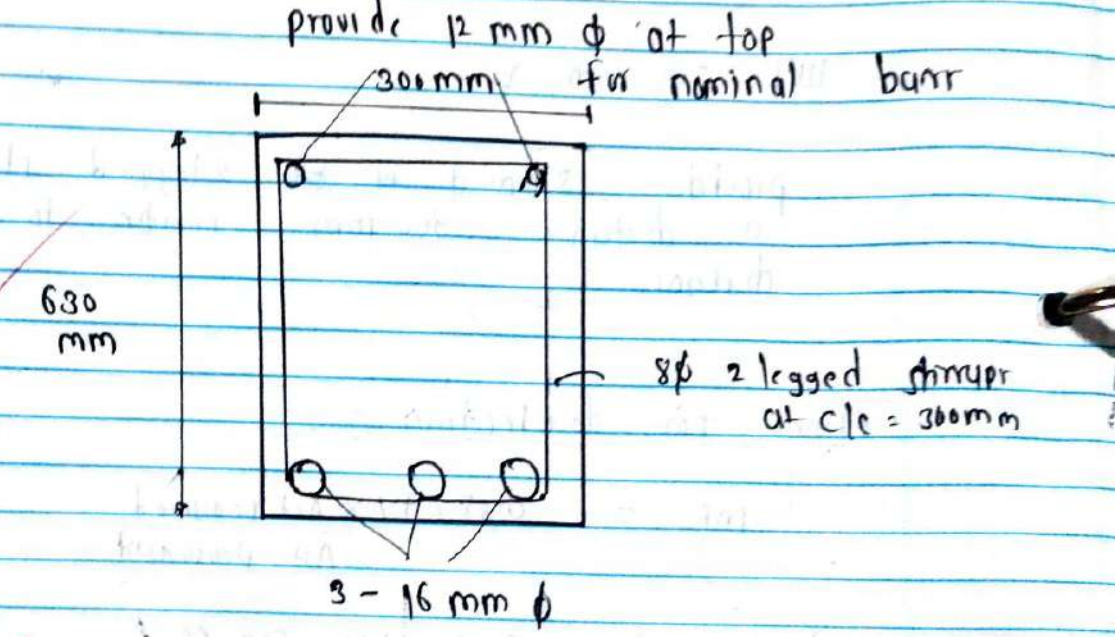
$\frac{span}{d} = 20 \times mf$

$\frac{5200}{d} = 20 \times 1.1$

$d = 263.63$ mm

$d_{required} < d_{provided}$

Hence safe



Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: ISE - II Date: 23/10/23

Name of Student: Ashtul Sayli vijay Division: A

Class: T.Y Subject: DCS-I

Roll No.: 01 Marks:

Sign of Supervisor: X

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC3	2	212	1	0	1					1
CESSC4	2	227	2	1	1					02
CESSC3	4	2.1.1 3.1.1.3	3	07						07
CESSC4	4	1.1.1 3.1.1.3 3.2.1	4	—	02					02
			5							
			6							
			7							
			8							
									Grand Total	12/20

Ans. 1) a) 1

1) ~~b)~~ Above the neural axis
As vehicle stops

2) d) .

3) c) 20

4) d) All options are correct

⇒ b = 250 mm
c = 5.8 m
b = 300 mm
dl = 12 kN/m

(1) Step 1 :- effective depth

(1) $\frac{span}{d}$ = 10.

$\frac{span}{d}$ = 10

d = 580 m.

D = 580 + 50
= 630. m

(2) calculation effective length

(1) eff. clear span + effective depth

9.8 + 0.58.
= 6.38

(2) clear span + $\frac{bearing}{2}$ + $\frac{bearing}{2}$

$9.8 + \frac{0.25}{2} + \frac{0.29}{2}$

= 6.05.

effective length = 6.05

① load calculation

dead load = b x D x 25
= 0.3 x 0.63 x 25
= 4.725

live load = 12 kN/m

total load = 4.725 + 12
= 16.725

M_u = 16.725 x 1.5
= 25.1025

$M_u = \frac{wl^2}{8} = \frac{25.10 \times 6.05^2}{8} = 114.84$

② calculation Mulim

B.M = M.R
Mulim = $0.133 f_{ck} bd^2$.
= $0.133 \times 20 \times 300 \times 580^2$
= 268.44 kN.m

$M_u < M_{ulim}$.

The sect^n is singly.

Assume balance sect^n

C = T
$0.36 f_{ck} x_u b = 0.87 f_y A_{st}$
$0.36 \times 20 \times x_u \times 300 = 0.87 \times 415 \times A_{st}$
$x_u = \frac{0.87 \times 415 \times 121.68}{300 \times 0.36 \times 20}$
= 20.03.

Ast calculation = 20.03.

$A_{st} = \frac{0.5 f_{ck} bd}{f_y} \left(1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} bd^2}}\right)$

= 0.

$$= \frac{0.5 \times 20 \times 300 \times 580}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 114}{300 \times 580^2}}\right]$$

$$= 590.2 \text{ mm}^2$$

$$\frac{x_{umax}}{d} = 0.53$$

$$x_{umax} = 0.53 \times 580$$
$$= 307.4$$

$$x_u < x_{umax}$$

$$\therefore A_{st} = 590.2$$

(1) No. of bars $= \frac{A_{st}}{\text{Ar. of one bar}}$

$$= \frac{590.2}{\frac{\pi}{4} \times 16^2}$$

$$= 2.93 \approx 3 \text{ bars}$$

(2) A_{st} provided $= \text{No. of bars} \times \text{Area}$
$$= 3 \times \frac{\pi}{4} \times 16^2$$
$$= 603.18$$

(3) p_t of steel $= \frac{100 A_{st} \text{ provid}}{bd}$

$$= \frac{100 \times 603.18}{300 \times 580}$$

$$= 0.3\%$$

⑥ checks

① check for shear

$$\tau v = \frac{Vu}{bd}$$

$$Vu = \frac{wl}{2} = \frac{25.10 \times 1.05}{2}$$

$$= 75.92$$

$$\tau v = \frac{75.92}{300 \times 500} \quad \therefore \tau v = 0.15$$

$$\frac{\tau c}{2} = \frac{0.3}{2}$$

$$= 0.15$$

$$\tau c = 0.28$$

$\tau v < \tau c$ ✓

Hence ok.

② check for length

$$Ld = 0.58 \times fy \times \frac{Ast\ pro}{Ast\ req}$$

$$= 0.58 \times 415 \times \frac{603.18}{590.21}$$

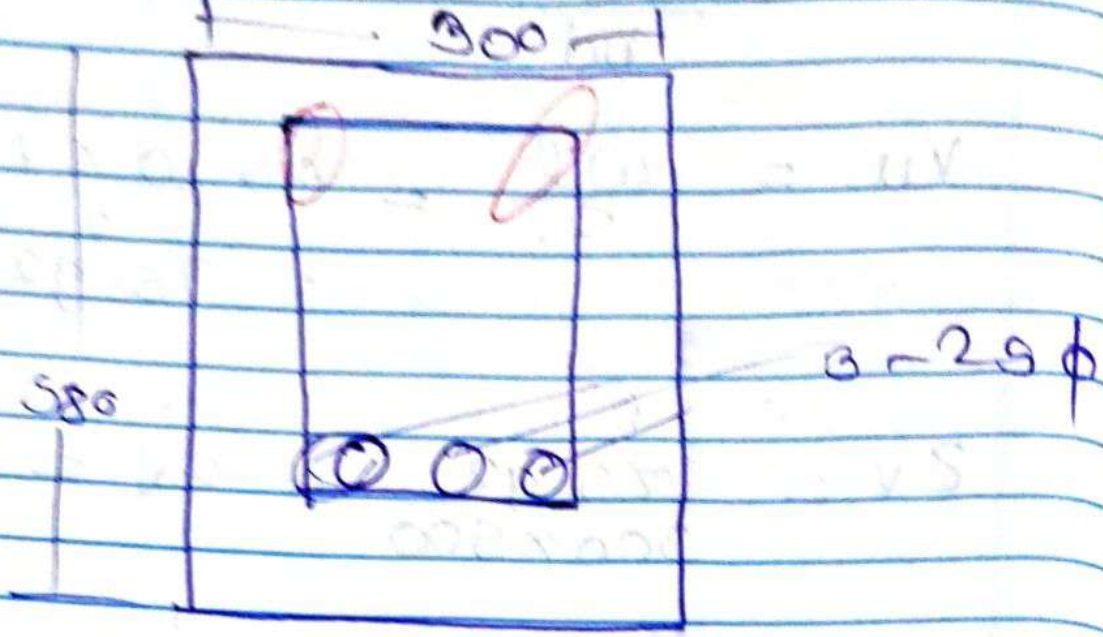
$$= 245.9 = 240.$$

$$Mf = 1.2$$

$$\frac{5800}{d} < 1.2 \times 10 \quad \therefore d \geq 489.9$$

$d_{req} < d_{provi}$

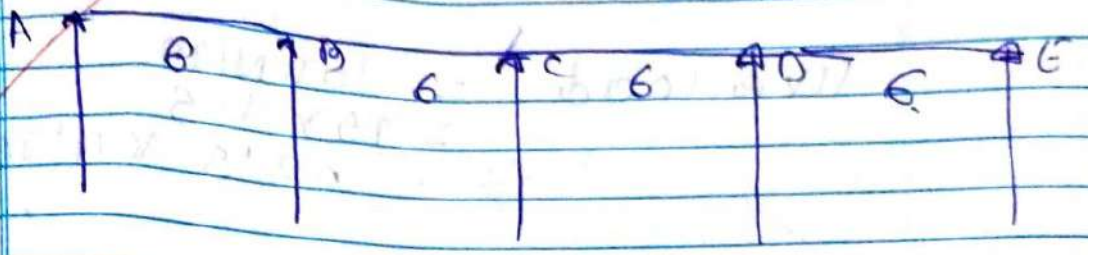
Hence safe.



24.4)

1)

→ b eff = 6 m
dl = 10 kN/m
ll = 15 kN/m
Fck = 25
fe = 500



① effective depth

$\frac{span}{d} = 15$

$\frac{6000}{d} = 15$

$d = 400\,mm$

$D = 400 + 50$

$= 450\,mm$

Assume bearing = 230

② effective length

① clear span + effective depth

$6 + 0.4$

$= 6.4$

c. span + beam/2 + beam

② $6 + \frac{0.23}{2} + \frac{0.23}{2} = 6.23$

effective length = 6.23 m

(3) load calculation

Dead load = 10 kN/m

Dead load = 10 × 1.5

du = 180 kN/m

live load = 15 kN/m

= 15 × 1.5

= 22.5 kN/m.

(4) B.M calculation.

(1) B.M at Mear middle of end span

$$B.M = \left(\frac{1}{12} \times 150 \times 6.23^2\right) + \left(\frac{1}{10} \times 22.5 \times \right.$$

= 572.49 kN.m

(2) B.M at middle of interior span

$$B.M = \left(\frac{1}{16} \times 150 \times 6.23^2\right) + \left(\frac{1}{12} \times 22.5 \times 6.23^2\right)$$

= 436.64 kN.m

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: _____ Date: _____

Name of Student: Ashtul Sayli Vijay.

Class: _____ Division: _____

Roll No.: 01 Subject: DCS-1

Sign of Supervisor: _____ Marks: _____

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

(1) B.m at Next to the end supp

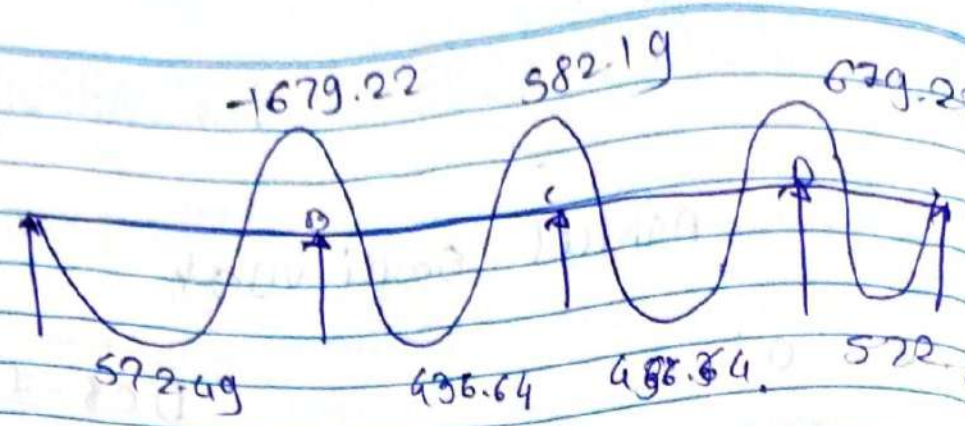
i B.m = $\left(\frac{-1}{10} \times 150 \times 6.23^2\right) + \left(\frac{-1}{9} \times 22.9 \times 6.23^2\right)$

$= -679.22$

(2) B.m at other interior supp

B.m = $\left(\frac{-1}{12} \times 150 \times 6.23^2\right) + \left(\frac{-1}{9} \times 22.9 \times 6.23^2\right)$

$= -882.19$



① max. sagg = 572.49 KN.m
② max. Hogg = 679.22

① Ast @ B.M = MR
679.22 = 0.133 fck bd²req

d²req = 679.22 / 0.133 × 25 × 230

dreq = 940.04 = 950.
dpro = 400

Hence unsafe

② Ast =

Ast = 0.5 fck bd / fy [1 − √(1 − 4.6 My / fck bd²)]

= 0.5 × 25 × 230 × 950 / 500 [1 − √(1 − 4.6 × 57 / 25 × 23

= 1693.77 mm²

Assume 25 mm dia

No. of bar = $\frac{Ast}{Ast}$

$= \frac{1693.77}{\frac{\pi}{4} \times 25^2}$

$= 3.86 \approx 3$ bar

Ast pro $= 8 \times \frac{\pi}{4} \times 25^2$

$= 1472.62$

Pt. steel $= \frac{100 \times 1472.62}{230 \times 950}$

$= 0.6$

② $Ast_2 = \frac{0.3 \times 25 \times 230 \times 950}{500} \left(1 - \sqrt{1 - \frac{4.6 \times 679.72}{25 \times 230 \times 950}}\right)$

$= 236.78$

② Ast pro $= \frac{236.78}{\frac{\pi}{4} \times 16^2}$

$= 4$ bars

Pt steel $= \frac{100 \times 236}{230 \times 950}$

$= 0.2$

② check for shear

① At support Next to the end support.

S.F $= (0.6 \times 150 \times 6.29^{20}) + (0.6 \times 22.5$

$V_u = 644.80$

$\tau_v = \frac{V_u}{bd}$

$\tau_v = \frac{644.80}{230 \times 450}$

$= 6.3$

$\tau_c = 0.29$

$\tau_v \nleq \tau_c$

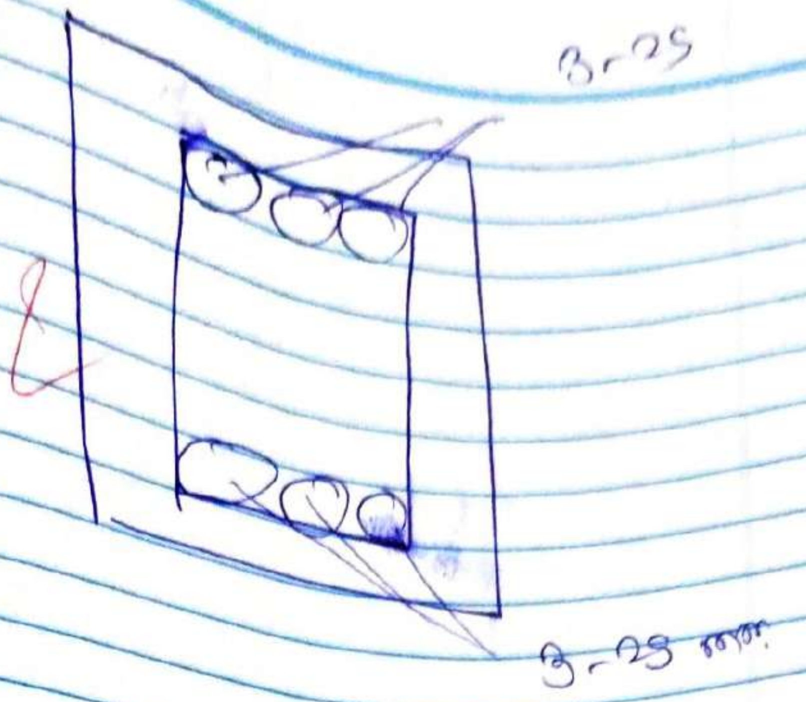
Hence unsafe

(2) $\frac{L}{d} < 20$

$\frac{6000}{d} < 20$

$\therefore 26.08 < 20$

Hence safe



(2)

Date: 14-12-2023

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE51C)
TOOL NAME: ISE-1
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE51C.5	CE51C.6	CE51C.5	CE51C.6	CE51C.5			CE51C.6		
			Max. Marks	5	5	5	5						
			Q. No. / Total Obtained Marks	Q1	Q2	Q3	Q4	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
2021010530158889	211CEI1000	SAYLI VIJAY ASHTUL	20	5	5	5	5	10	10	100	10	10	100
2022010530442493	221CEI2003	AISHWARYA ROHIDAS CHAVAN	20	5	5	5	5	10	10	100	10	10	100
2021010530165581	211CEI1029	NAMRATA DINKAR CHAVARE	18	5	5	5	3	10	9	90.00	10	8	80.00
2021010530166671	211CEI1021	SANIKA GAJANAN DESHMUKHE	18	5	5	5	3	10	9	90.00	10	8	80.00
2022010530442721	221CEI2024	KAJAL SHRAVAN KAMBLE	16	5	5	5	1	10	10	100	10	6	60.00
2021010530166591	211CEI1019	PRIYANKA PRATAP KARANDE	10	5	5	0	0	10	2	20.00	10	6	60.00
2021010530167891	211CEI1025	RUTUJA MAHESH KAWADE	8	5	5	0	1	10	2	20.00	10	10	100
2022010530445361	221CEI2022	PRIYANKA IRANNA KOLI	20	5	5	5	5	10	10	100	10	6	60.00
2021010530168391	211CEI1026	AISHWARYA PRADIP KUMBHAR	14	5	5	3	1	10	8	80.00	10	10	100
2021010530167981	211CEI1018	DIVYA RAJENDRA LATAKE	19	5	5	5	4	10	9	90.00	10	10	100
2021010530166611	211CEI1005	AAKANKSHA JAGANNATH MANE	12	5	5	0	2	10	2	20.00	10	10	100
2021010530166171	211CEI1012	POOJA DADASAHEB NAGANE	18	5	5	3	5	10	8	80.00	10	8	80.00
2021010530166251	211CEI1022	SNEHAL NAVNATH RONGE	17	5	5	4	3	10	9	90.00	10	6	60.00
2021010530165601	211CEI1010	ALVIRA AMIN SHAIKH	12	5	5	2	0	10	6	60.00	10	8	80.00
2021010530166101	211CEI1032	ANISHA AMAR SURVASE	16	5	5	3	3	10	8	80.00	10	8	80.00
2022010530443351	221CEI2038	SHIVALINGAMMA CHANDRAKANT TENGALE	18	5	5	4	4	10	10	100	10	8	80.00
2021010530168311	211CEI1014	RAMESH BAPU BANDGAR	17	5	5	4	3	10	9	90.00	10	7	70.00
2021010530168341	211CEI1004	AJAY BHAGWAT BANSODE	16	5	5	4	2	10	9	90.00	10	10	100
2021010530169571	211CEI1031	PRATHMESH LAXMAN CHAVAN	18	5	5	3	5	10	8	80.00	10	6	60.00
2021010530168491	211CEI1030	SWARUP RAJARAM CHAVAN	13	5	5	2	1	10	7	70.00	10	8	80.00
2021010530165781	211CEI1011	SWAPNIL MAHADEV DHULAGUDE	10	5	5	0	0	10	2	20.00	10	5	50.00
2021010530167241	211CEI1007	VISHWAJEET SANJAY GHADGE	12	5	5	1	1	10	7	70.00	10	10	100
2022010530443791	221CEI2040	SAMARTH PRAKASH HIPPARGI	19	5	5	4	5	10	9	90.00	10	9	90.00
2021010530167291	211CEI1021	VITTHAL SAINATH HOTKAR	18	5	5	4	4	10	9	90.00	10	9	90.00
2021010530159061	211CEI1017	PRATIK DADA KARE	18	5	5	4	4	10	9	90.00	10	9	90.00
2021010530148691	211CEI1028	ABHIJIT ASHOK KHALADKAR	18	5	5	4	4	10	9	90.00	10	9	90.00
2022010530443141	221CEI2035	SANKET CHANDRAKANT LENDAVE	20	5	5	5	5	10	10	100	10	10	100
2021010530167161	211CEI1013	GOPAL DATTA MADANE	16	5	5	4	2	10	9	90.00	10	7	70.00
2022010530443831	221CEI2045	RAJUL MANAGENI MASHALE	15	5	5	4	1	10	9	90.00	10	6	60.00
2021010530167231	211CEI1003	TUKARAM SHANKAR METAKARI	14	5	5	4	0	10	9	90.00	10	5	50.00
2022010530443471	221CEI2015	AVINASH SHARANAPPA NILGAR	20	5	5	5	5	10	10	100	10	10	100
2022010530443561	221CEI2021	VIGHNAHAR SHARAD NILGAR	20	5	5	5	5	10	10	100	10	10	100
2022010530443421	221CEI2005	ABHISHEK SURESH NIMBAL	20	5	5	5	5	10	10	100	10	10	100
2022010530443801	221CEI2051	YASH SATISH NIMBALKAR	18	5	5	4	4	10	9	90.00	10	9	90.00
2022010530443001	221CEI2058	MAHESH LAXMAN PADVALE	19	5	5	5	4	10	10	100	10	9	90.00
2021010530169211	211CEI1027	OM VIVEKANAND PATIL	10	5	5	1	0	10	8	80.00	10	2	20.00
2021010530168971	211CEI1015	RAJ MOHAN RONGE	10	5	5	0	0	10	5	50.00	10	5	50.00
2021010530169261	211CEI1002	AKASH SUBHASH SHEGAR	11	5	5	1	0	10	8	80.00	10	3	30.00
2021010530168541	211CEI1009	DATTATRAY MARUTI SHEJAL	12	5	5	1	1	10	8	80.00	10	4	40.00
2021010530169001	211CEI1024	YUVRAJ SITARAM SHINDE	14	5	5	2	2	10	10	100	10	4	40.00
2022010530443591	221CEI2047	SURESH BHIMANNA SUNAGAR	12	5	5	1	1	10	9	90.00	10	3	30.00
2022010530443661	221CEI2028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	12	5	5	1	1	10	9	90.00	10	3	30.00
2022010530443601	221CEI2030	SHRAVAN SURYAKANT WAGHAMODE	14	5	5	2	2	10	10	100	10	4	40.00

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 3

(Percentage of students scoring Marks >=60) = Level 2

[redacted]	[redacted]	[redacted]
No. of Students achieving Target Level	38	33
No. of Applicable Students	43	43
% Students achieving Target Level	88.37	76.74
Attainment	3	3

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No: III Date: 8/12/2023

Name of Student: Kumbhal A.S

Class: TY Division: A

Roll No: 34 Subject: DCI-I

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO1	2	2.1.2	1	1	1					02
CO6	2	2.2.2	2	1	1					02
CO5	4	2.1.1 3.1.2.3	3	08						08
CO6	4	2.1.3.1 3.3.1	4	08						08
			5							
			6							
			7							
			8							
									Grand Total	20/20

Q1] a] b]

Q2] a] b]

Q3] a] b]

Q 9]

1] Given:

Fck: ~~415~~ 20

FY : 415

VU = 95 kN

TU : 245 kN

MU : 115 kN.m

b = 300 mm, D = 600mm

step ① calculate the effective depth of beam

d = ~~eff~~ D - clear cover - stirup - $\frac{\text{bar dia}}{2}$

assume bar diameter : 20mm

and ~~Rom~~ stirrup diameter = 10mm

and clear cover : 25mm

$d = 600 - 25 - \frac{20}{2} - 10$

$\boxed{d = 555 \text{ mm}}$

step ② To calculate equivalent bending moment

$M_{e1} = MU + MT$

$\therefore MT = TU \left[\frac{(1 + D/b)}{1.7}\right]$

$= 245 \left[\frac{(1 + 600/300)}{1.7}\right]$

$\boxed{MT = 79.41 \text{ kN.m}}$

$M_{e1} = M_u + M_t$

$= 115 + 79.41$

$M_{e1} = 194.41$ kN·m

$M_u > M_t$ singly R/F

check for depth

$M_{e1} = 0.138\ f_{ck}\ b d^2$

$194.41 \times 10^6 = 0.138 \times 20 \times 300 \times d^2$

$d = 484.55$

$D = 500$ mm

$d = 500$ mm required

$d_{required} > d_{provided}$ Hence ok.

Step 3] To calculate steel area

$$A_{st} = \frac{0.5 \times f_{ck} \times bd}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_{u e1}}{f_{ck} b d^2}}\right]$$

$$= \frac{0.5 \times 20 \times 300 \times 555}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 194.41 \times 10^6}{20 \times 300 \times 555^2}}\right]$$

$A_{st} = 1129.73\ mm^2$

bar diameter = 20mm

To calculate No. of bar

Ast of single bar $= \frac{\pi}{4} \times 20^2$

$= 314.15 \text{ mm}^2$

No of bar $= \frac{Ast}{\text{Ast of single bar}}$

$= \frac{1129.73}{314.15}$

$= 3.59 \cong 4$

No. of bar = 4 Nos

Ast provided $= 4 \times \frac{\pi}{4} \times 20^2$

$= 4 \times 314.15$

Ast provided $= 1256.6 \text{ mm}^2$

percentage of steel $= 100 \times \frac{Ast \text{ provided}}{bd}$

$= 100 \times \frac{1256.6}{300 \times 555}$

$P_t\% = 0.75\%$

check for shear -

$\tau_v = \frac{V_{ue}}{bd}$

$V_{ue} = V_u + 1.6 \times \frac{T_u}{b}$

$= 95 \times 10^3 + 1.6 \times \frac{45 \times 10^6}{300}$

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: III Date: 8/12/2023

Name of Student: Nimbal Abhishek Suresh

Class: TY Division: A

Roll No.: 34 Subject: DCS-1

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

$V_{ue} = 335 \times 10^3$

$V_{ue} = 335$ kN

$2v = \frac{V_{ue}}{bd}$

$= \frac{335 \times 10^3}{300 \times 555}$

$2v = 2.01$

$2c = \frac{Pt.}{2} = \frac{0.75}{2} = 0.375$

0.25	→	0.36
0.375	→	
0.5	→	0.48

by interpolation

$\tau_c = 0.42$

$\tau_v > \tau_c$

provide unbalanced shear.

provide 2 - 12 mm ϕ for nominal bar at top and 4 bar of 20 mm at bottom.

step - (5) - To calculate A_{sv}

provide ϕ 2 legged 10 mm bar diameter for stirrups

$$A_{sv} = 2 \times \frac{\pi}{4} \times 10^2$$

$A_{sv} = 157.07 \text{ mm}^2$

To calculate spacing of stirrups

(1) $$A_{sv} = \frac{(\tau_v - \tau_c) b . s_v}{0.87 \times f_y}$$

$$157.07 = \frac{(2.01 - 0.42) 300 \times s_v}{0.87 \times 415}$$

$s_v = 118.88$

$s_v = 110 \text{ mm}$

(2) $A_{sv} = \frac{T_u s_v}{b_1 d_1 (0.87 f_y)} + \frac{V_u s_v}{2.5 d_1 (0.87 f_y)}$

$157.07 = \frac{45 \times 10^6 \times 2 \times s_v}{\quad}$

$b_1 = 300 - 25 - 10 - \frac{20}{2} - 25 - 10 - \frac{20}{2}$

$b_1 = 210\ mm$

$d_1 = 600 - 25 - 10 - \frac{20}{2} - 25 - 10 - \frac{12}{2}$

$d_1 = 514\ mm$

$157.07 = \frac{45 \times 10^6 \times s_v}{210 \times 514 (0.87 \times 415)} + \frac{95 \times 10^3 \times s_v}{2.5 \times 514 \times (0.87 \times 415)}$

$157.07 = 1.1359\ s_v$

$s_v = 115.5\ mm$

$s_v = 110\ mm$

(3) $\frac{x_1 + y_1}{4} = s_v$

$x_1 = 300 - 25 - \frac{10}{2} - \frac{25 - 10}{2} =$

$x_1 = 240\ mm$

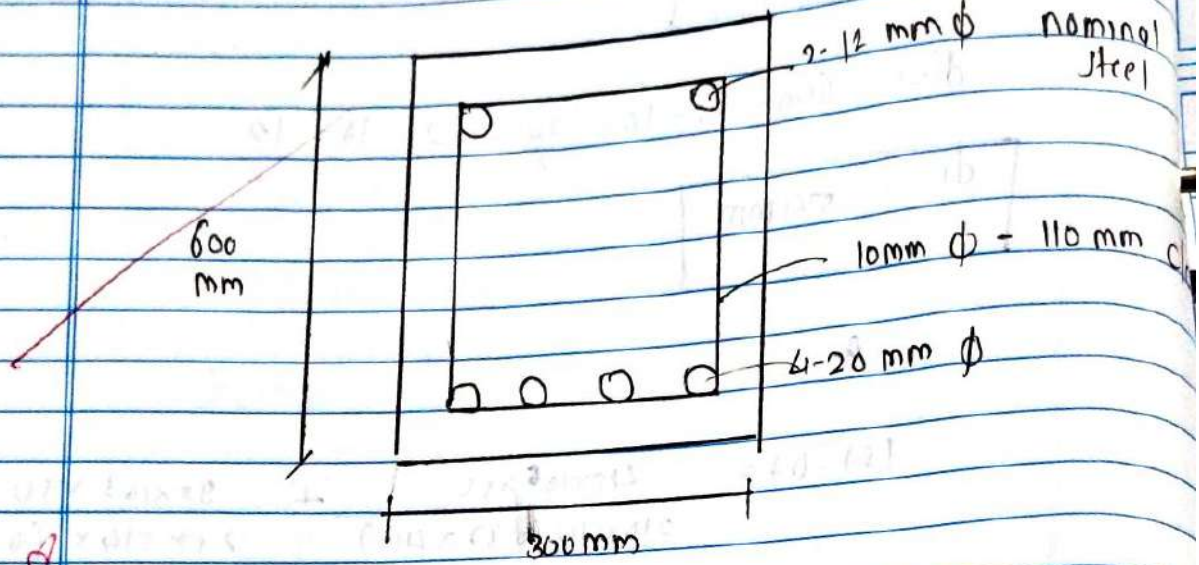
$y_1 = 600 - 25 - \frac{10}{2} - 25 - \frac{10}{2}$

$y_1 = 540\ mm$

$$\frac{x_1 + 41}{4}$$

$$= \frac{240 + 540}{2}$$

$SV = 190\,mm$



Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: ~~Nimbal~~ III Date: 8/12/2023

Name of Student.: Nimbal Abhishek Jumab

Class.: TY Division.: A

Roll No.: 34 Subject.: DCS-2

Sign of Supervisor.: Marks.:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	

(Q.4)

1] Given:-

L = 4m , P = 1600 kN.

fck = 20 N/mm² , Fy = 415 N/mm²

step ① To calculate factored load

~~To roll~~ Pu = P × 1.5

Pu = 1600 × 1.5

Pu = 2400 KN

② effective length calculation

$l_{eff} = 0.65\,L$

$l_{eff} = 0.65 \times 4$

$l_{eff} = 2.6$ m

Step ③

Assume column is short column

≤ 12

$\frac{l_{eff}}{\text{least lateral diamention}}$

Assume.

A_{sc} = 1% of Ag

A_c = 99% of Ag

$P_u = 0.4 f_{ck} A_c + 0.67 f_y A_{sc}$

$2401 \times 10^3 = 0.4 \times 20 \times 0.99 Ag + 0.67 \times 415 \times 0.01$

$Ag = 224.28 \times 10^3$ mm²

now

$A_{sc} = 0.01 \times 224.28 \times 10^3$

$A_{sc} = 2242.8$ mm²

assume b = 450 mm

$Ag = b \times D$

$D = \frac{Ag}{b}$

$D = \frac{224.28 \times 10^3}{450}$

D = 500 mm

Now,

~~check~~

~~$e_{min} = \frac{\text{lee ft}}{0.500} + \frac{\text{least lateral dimention}}{30} > 21$~~

Check:

$$\frac{\text{least effective length}}{\text{least lateral diameter}} < 12$$

$$\frac{2600}{450} < 12$$

$$\boxed{5.77 < 12}$$

So, assumption is correct

~~to~~ step (4) to calculate emin and e

$$e_{min} = \frac{\text{lee ft}}{500} + \frac{\text{least lateral diameter}}{30} > 21$$

$$= \frac{2600}{500} + \frac{450}{30} > 21$$

$$\boxed{e_{min} = 20 < 21}$$

$$e = 0.05\,D$$
$$= 0.05 \times 500$$

$$\boxed{e = 25}$$

$$\boxed{e_{min} < e}$$ - so short column

step-6

→ To calculate no of bar

assume 25 mm bar diameter

Ast of single bar = $\frac{\pi}{4} \times 25^2$

= 490.87 mm

No. of bar = $\frac{Asc}{\text{area of single bar}}$

= $\frac{2242.8}{490.87}$

= 4.56 ≅ 5 = 6

No. of bar = 6

step-7 To calculate laterally diameter

$\phi t = \frac{1}{4} \times$ diameter of bar

$= \frac{1}{4} \times 25$

$\phi t = 6.25$ mm

$\phi t = 8$mm

step 8] To calculate spacing :-

① least diamention = 450mm

② 16x bar diameter = 16 x 25 = 400 mm

③ 300mm

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: III Date: 8/11/2018

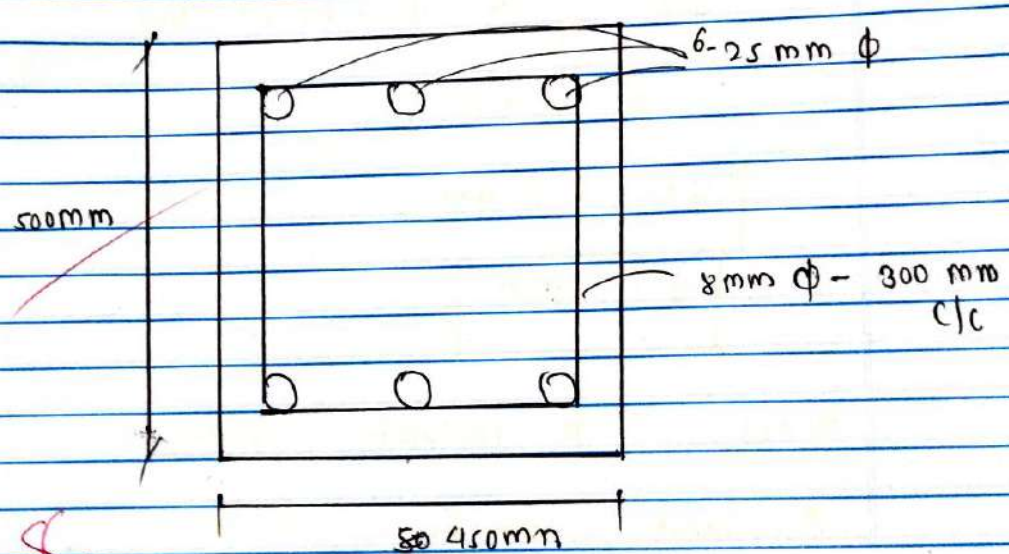
Name of Student.: Jumbad. A.Y

Class: TY Division: A

Roll No.: 34 Subject: DCS-I

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
			1							
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	



Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: III Date:

Name of Student: Aakanksha Jagannath Mane

Class: TY B Tech Division: A

Roll No.: 11 Subject: DCS - I

Sign of Supervisor: 08/12/22 Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO5	2	2.1.2	1	1	1					02
CO6	2	2.2.2	2	1	1					02
CO5	4	2.1.1 3.1.2.3	3	0						0
CO6	4	2.1.3.2.1 3.3.1	4	08						08
			5							
			6							
			7							
			8							
									Grand Total	12/20

Q.1)

1] b]

2] b]

Q.2)

1] b]

1] b]

2

Q.41

→ 1)

Given:

$l = 4\ m$

$P = 1600\ kN$

$Fck = 20\ Mpa$

$Fy = 415\ Mpa$

Step 1: Cal. Pu

$Pu = 1.5 \times P$

$= 1.5 \times 1600$

$Pu = 2400\ kN$

Step 2: Cal. leff.

$leff = 0.65\ l$

$= 0.65 \times 4000$

$leff = 2600\ mm$

Step 3:

Assume % of steel = 1%.

$\therefore Asc = 0.01\ Ag$

$Ac = 0.99\ Ag$

Step 4:

$Pu = 0.4\ Fck\ Ac + 0.67\ Fy\ Asc$

$2400 \times 10^3 = 0.4 \times 20 \times 0.99\ Ac + 0.67 \times 415 \times 0.01\ Ag$

$Ag = 224.28 \times 10^3$

$D = \sqrt{Ag}$

$= \sqrt{224.28 \times 10^3}$

$b = 473.58 \approx 500\ mm$

Step 5: check for short column

$\frac{l_{eff}}{500} + \frac{\text{least lateral dim}}{30} \leq 12$

$\frac{2600}{500} + \frac{500}{30} \leq 12$

$\frac{l_{eff}}{\text{least lateral dim.}} \leq 12$

$\frac{2600}{500} \leq 12$

$5.2 \leq 12$

∴ This is short column assumption is right.

Step 6: Cal. emin

$e_{min} = \frac{l_{eff}}{500} + \frac{\text{least lateral dim}}{30} > 20$

$= \frac{2600}{500} + \frac{500}{30} > 20$

$= 21.86 > 20$

$e = 0.05D = 0.05 \times 500 = 25$

$e_{min} \leq e$

$A_g = b \times D$

$A_g = 500 \times 500 = 250 \times 10^3 \text{ mm}^2$

$A_{sc} = 0.01 A_g = 2500 \text{ mm}^2$

$A_c = 0.99 A_g = 247500 \text{ mm}^2$

Step 7: Assume bar dia of 25 ϕ

Area of one bar $= \frac{\pi}{4} \times d^2 = \frac{\pi}{4} \times 25^2$

$= 490.87 \text{ mm}^2$

No. of bar $= \frac{A_{sc}}{\text{Area of one bar}} = \frac{2500}{490.87}$

$= 5.09 \approx 6$ No. 8

Asc prov $= 6 \times 490.87 = 2945.22$

step 8:

i) $\phi_t = \frac{1}{4} \times$ lateral dia.

$= \frac{1}{4} \times 25$

$= 6.25$ mm

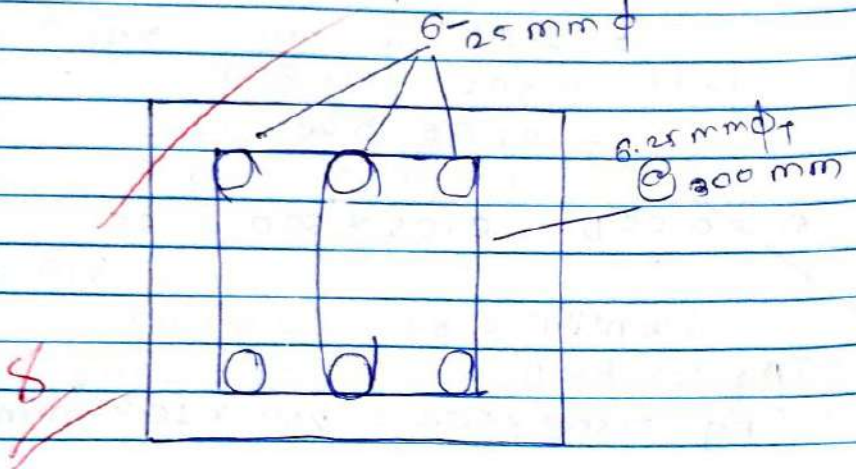
ii) $\phi_t = 6$ mm

step 9: Cal. spacing

i) least lateral dim. $= 500$ mm

ii) $16 \times D = 16 \times 25 = 400$ mm

iii) 300 mm



Q. 3]

1] Given:

b = 300 mm

D = 600 mm

Fck = 20 N/mm²

Fy = 415

Vu = 95 kN

Tu = 45 kN-m

Mu = 115 kN-m

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

Date: 08/12/2023

ISE / Unit Test No.: III

Name of Student: Dhulgude Swapnil mahadev

Class: T.Y. civil Division: A

Roll No.: 22 Subject: DES-I.

Sign of Supervisor: Marks:

CO:	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESC5	2	2.1.2	1	1	1					02
CESC6	2	2.2.2	2	1	1					02
CESC5	4	2.1.1 3.1.2.3	3	0						0
CESC6	4	2.1.1 3.2.1 3.3.1	4	06						06
			5							
			6							
			7							
			8							
									Grand Total	10/20

Q. 1. Mcq

1) b

2) b

Q. 2.

1) b

2) b.

Q. 4.

1)

→ Given :-

L = 4m

P = 1600 kN

Fck : M20

Fy : 415 ~~steel~~ N/mm²

i) Cal. Pu

Pu = 1.5 × P

= 1.5 × 1600

= 2400 kN

ii) leff = 0.65 L

= 0.65 × 4000

= 2600 mm

∴ Assume :

Ac = 1% Ag = 0.1 Ag

Asc = 99% Ag = 0.99 Ag

∴ Assume short column.

emin ≤ e

∴ Pu = 0.4 Fck Ac + 0.67 Fy Asc

∴ 2400×10^3 = 0.4 × 20 × (0.1 × Ag) +
0.67 × 415 × (0.99 Ag)

∴ 2400×10^3 = 0.8 Ag + 275.26 Ag

∴ 2400×10^3 = 276.069 Ag

$$A_g = \frac{2400 \times 10^3}{276.069}$$

$$A_g = 8693.47 \text{ mm}^2$$

∴ Assume $b = 450$ mm

$$A_g = b \times D$$

∴

$$D = \frac{A_g}{b}$$

$$D = \frac{8693.47}{450}$$

∴

$$D = 623.79 \text{ mm} \approx 650 \text{ mm}$$

∴

$$A_c = 0.1 \times A_g$$
$$= 0.1 \times 8693.47$$
$$= 86.93 \text{ mm}^2$$

$$A_{sc} = 0.99 \times A_g$$
$$= 0.99 \times 8693.47$$
$$A_{sc} = 8606.53 \text{ mm}^2$$

6

Open Book Test
Question Paper and Answer Sheet

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Open Book Test (OBT)

1. Question Paper
2. Answer sheet
3. Result

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Open Book Test (OBT)

Question Paper

OBT-II

Design of Concrete Structure-I

* Indicates required question

1. Roll No *

2. Name *

3. A T-beam behaves as a rectangular beam of a width equal to its flange if its neutral axis..... *

Mark only one oval.

- Remains within the flange
- Remains below the slab
- Coincides the geometrical centre of the beam
- None of these View answer

4. According to the steel beam theory of doubly reinforced beams *

Mark only one oval.

- Tension is resisted by tension steel
- Compression is resisted by compression steel
- Stress in tension steel equals the stress in compression steel
- All the above

5. An intermediate T-beam reinforced with two layers of tensile steel with clear cover 13 cm encased with the floor of a hall 12 meters by 7 meters, is spaced at 3 meters from adjoining beams and if the width of the beam is 20 cm, the breadth of the flange is..... *

Mark only one oval.

- 300
- 233
- 176
- 236

6. An under-reinforced section means..... *

Mark only one oval.

- Steel is provided at the underside only
- Steel provided is insufficient
- Steel provided on one face only
- Steel will yield first

7. Design of R.C.C. simply supported beams carrying U.D.L. is based on the resultant B.M. at..... *

Mark only one oval.

- Supports
- Mid span
- Every section
- Quarter span

8. A reinforced concrete beam with rectangular cross-section (width = 300 mm, effective depth = 580 mm) is made of M30 grade concrete. It has 1% longitudinal tension reinforcement of Fe 415 grade steel. The design shear strength for this beam is 0.66 N/mm2 . The beam has to resist a factored shear force of 440 kN. The spacing of twolegged, 10 mm diameter vertical stirrups of Fe 415 grade steel is _____mm. (round off to the nearest integer) *

Mark only one oval.

- 100
- 1000
- 700
- 800

9. The flexural strength of M30 concrete as per IS:456-2000 is * [redacted]

Mark only one oval.

- 3.83 MPa
- 5.47 MPa
- 21.23 MPa
- 30.0 MPa

10. Effective width in L beam is _____ * [redacted]

Mark only one oval.

- (l0/12) + bw + 3 Df
- (l0/12) + 3bw + Df
- (l0/6) + bw + 6 Df
- (l0/12) + bw + 6Df

11. How is the deflection in RC beam controlled as per IS 456? *

Mark only one oval.

- By using large aspect ratio
- By using small modular ratio
- By controlling span to depth ratio
- By moderating water cement ratio

12. The shear coefficient of continuous beam of uniform c/s which supports UDL over three or more spans which do not differ by more than 15% of the long span are _____ for D.L. and _____ for L.L. at all other interior supports. *

Mark only one oval.

- 0.4, 0.45
- 0.6, 0.6
- 0.55, 0.6
- 0.5, 0.6

[redacted]

OBT-III

Design of Concrete Structure-I

* Indicates required question

1. Roll No *

2. Name *

3. For member subjected to bending and torsion two legged closed hoops enclosing the corner longitudinal bars shall have an area of cross-section Asv given by, *

Mark only one oval.

- Asv = [(Tu.Sv/b1d1(0.47fy)] + [Vu.Su/2.5d1(0.47fy)]
- Asv = (Tu.Sv/b1d1(0.87fy) + Vu Tu)
- Asv(Tu.Sv/b1d1(0.85fy)
- D. Asv = [(Tu.Sv/b1d1(0.87fy)] + [Vu.Su/2.5d1(0.87fy)]

4. According to the steel beam theory of doubly reinforced beams Where depth of beam exceeds 750 mm the side face reinforcement shall be Provided along the two faces. The total area of such reinforcement shall not be Less than…….. % of web area. *

Mark only one oval.

- 0.1
- 0.15
- 0.2
- 0.25

5. From limiting deflection point of view, use of high strength steel in RC beam results in_____ *

Mark only one oval.

- Reduction in depth
- No change in depth
- Increase in depth
- D. Increase in width

6. At the limit state of collapse, an RC beam is subjected to factored SF = 20 kN, factored torsional moment = 9 kN-m and factored flexural moment = 200 kN-m. The beam is 300 mm wide and has a gross depth of 425 mm, with an effective cover of 25 mm. The equivalent shear force (Ve) is_____ *

Mark only one oval.

- 20
- 56
- 54
- 68
- Option 5

7. At the limit state of collapse, an RC beam is subjected to factored SF = 20 kN, factored torsional moment = 9 kN-m and factored flexural moment = 200 kN-m. The beam is 300 mm wide and has a gross depth of 425 mm, with an effective cover of 25 mm. The equivalent flexural moment (Meq) to designing longitudinal tension steel is_____ *

Mark only one oval.

- 187 kN-m
- 209 kN-m
- 200 kN-m
- D. 213 kN-m

8. The diameter of the polygonal links or lateral ties shall not be less than..... *

Mark only one oval.

- 6 mm
- max of A and D
- least of A and D
- 1/4 diameter of larger longitudinal bar

9. The minimum number of longitudinal bars provided in a column shall be …… in a rectangular column. *

Mark only one oval.

- 6
- 4
- 8
- 2

10. Helical reinforcement in circular column is provided in terms of *

Mark only one oval.

- Helix
- Links
- Stirrups
- Ties

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Open Book Test (OBT)

Answer sheet

OBT-II

Design of Concrete Structure-I

Roll No *

33

Name *

Vighnahar Sharad Nilgar

A T-beam behaves as a rectangular beam of a width equal to its flange if its neutral axis..... * 2 points

- (●) Remains within the flange
- ( ) Remains below the slab
- ( ) Coincides the geometrical centre of the beam
- ( ) None of these View answer

According to the steel beam theory of doubly reinforced beams * 2 points

- ( ) Tension is resisted by tension steel
- ( ) Compression is resisted by compression steel
- ( ) Stress in tension steel equals the stress in compression steel
- (●) All the above

An intermediate T-beam reinforced with two layers of tensile steel with clear cover 13 cm encased with the floor of a hall 12 meters by 7 meters, is spaced at 3 meters from adjoining beams and if the width of the beam is 20 cm, the breadth of the flange is..... * 2 points

- ( ) 300
- ( ) 233
- (●) 176
- ( ) 236

An under-reinforced section means..... * 2 points

- ( ) Steel is provided at the underside only
- (●) Steel provided is insufficient
- ( ) Steel provided on one face only
- ( ) Steel will yield first

Design of R.C.C. simply supported beams carrying U.D.L. is based on the resultant B.M. at..... * 2 points

- ( ) Supports
- (●) Mid span
- ( ) Every section
- ( ) Quarter span

A reinforced concrete beam with rectangular cross-section (width = 300 mm, effective depth = 580 mm) is made of M30 grade concrete. It has 1% longitudinal tension reinforcement of Fe 415 grade steel. The design shear strength for this beam is 0.66 N/mm2 . The beam has to resist a factored shear force of 440 kN. The spacing of twolegged, 10 mm diameter vertical stirrups of Fe 415 grade steel is _____mm. (round off to the nearest integer) * 2 points

- (●) 100
- ( ) 1000
- ( ) 700
- ( ) 800

The flexural strength of M30 concrete as per IS:456-2000 is * 2 points

- (●) 3.83 MPa
- ( ) 5.47 MPa
- ( ) 21.23 MPa
- ( ) 30.0 MPa

Effective width in L beam is _____ * 2 points

- (●) (l0/12) + bw + 3 Df
- ( ) (l0/12) + 3bw + Df
- ( ) (l0/6) + bw + 6 Df
- ( ) (l0/12) + bw + 6Df

How is the deflection in RC beam controlled as per IS 456? * 2 points

- ( ) By using large aspect ratio
- ( ) By using small modular ratio
- (●) By controlling span to depth ratio
- ( ) By moderating water cement ratio

The shear coefficient of continuous beam of uniform c/s which supports UDL over three or more spans which do not differ by more than 15% of the long span are _____ for D.L. and _____ for L.L. at all other interior supports. * 2 points

- ( ) 0.4, 0.45
- ( ) 0.6, 0.6
- ( ) 0.55, 0.6
- (●) 0.5, 0.6

OBT-II

Design of Concrete Structure-I

Roll No *

12

Name *

Nagane Pooja Dadasaheb

A T-beam behaves as a rectangular beam of a width equal to its flange if its neutral axis..... * 2 points

- (●) Remains within the flange
- ( ) Remains below the slab
- ( ) Coincides the geometrical centre of the beam
- ( ) None of these View answer

According to the steel beam theory of doubly reinforced beams * 2 points

- ( ) Tension is resisted by tension steel
- ( ) Compression is resisted by compression steel
- ( ) Stress in tension steel equals the stress in compression steel
- (●) All the above

An intermediate T-beam reinforced with two layers of tensile steel with clear cover 13 cm encased with the floor of a hall 12 meters by 7 meters, is spaced at 3 meters from adjoining beams and if the width of the beam is 20 cm, the breadth of the flange is..... * 2 points

- ( ) 300
- ( ) 233
- (●) 176
- ( ) 236

An under-reinforced section means..... * 2 points

- ( ) Steel is provided at the underside only
- ( ) Steel provided is insufficient
- ( ) Steel provided on one face only
- (●) Steel will yield first

Design of R.C.C. simply supported beams carrying U.D.L. is based on the resultant B.M. at..... * 2 points

- ( ) Supports
- (●) Mid span
- ( ) Every section
- ( ) Quarter span

A reinforced concrete beam with rectangular cross-section (width = 300 mm, effective depth = 580 mm) is made of M30 grade concrete. It has 1% longitudinal tension reinforcement of Fe 415 grade steel. The design shear strength for this beam is 0.66 N/mm2 . The beam has to resist a factored shear force of 440 kN. The spacing of twolegged, 10 mm diameter vertical stirrups of Fe 415 grade steel is _____mm. (round off to the nearest integer) * 2 points

- (●) 100
- ( ) 1000
- ( ) 700
- ( ) 800

The flexural strength of M30 concrete as per IS:456-2000 is * 2 points

- ( ) 3.83 MPa
- (●) 5.47 MPa
- ( ) 21.23 MPa
- ( ) 30.0 MPa

Effective width in L beam is _____ * 2 points

- (●) (l0/12) + bw + 3 Df
- ( ) (l0/12) + 3bw + Df
- ( ) (l0/6) + bw + 6 Df
- ( ) (l0/12) + bw + 6Df

How is the deflection in RC beam controlled as per IS 456? * 2 points

- ( ) By using large aspect ratio
- ( ) By using small modular ratio
- (●) By controlling span to depth ratio
- ( ) By moderating water cement ratio

The shear coefficient of continuous beam of uniform c/s which supports UDL over three or more spans which do not differ by more than 15% of the long span are _____ for D.L. and _____ for L.L. at all other interior supports. * 2 points

- ( ) 0.4, 0.45
- ( ) 0.6, 0.6
- ( ) 0.55, 0.6
- (●) 0.5, 0.6

OBT-III

Design of Concrete Structure-I

Roll No *

03

Name *

Chavan Aishwarya Rohidas

For member subjected to bending and torsion two legged closed hoops enclosing the corner longitudinal bars shall have an area of cross-section Asv given by, * 2 points

- Asv = [(Tu.Sv/b1d1(0.47fy)] + [Vu.Su/2.5d1(0.47fy)]
- Asv = (Tu.Sv/b1d1(0.87fy) + Vu Tu)
- Asv(Tu.Sv/b1d1(0.85fy)
- (selected) D. Asv = [(Tu.Sv/b1d1(0.87fy)] + [Vu.Su/2.5d1(0.87fy)]

According to the steel beam theory of doubly reinforced beams Where depth of beam exceeds 750 mm the side face reinforcement shall be Provided along the two faces. The total area of such reinforcement shall not be Less than…….. % of web area. * 2 points

- (selected) 0.1
- 0.15
- 0.2
- 0.25

From limiting deflection point of view, use of high strength steel in RC beam results in_____ * 2 points

- Reduction in depth
- No change in depth
- (selected) Increase in depth
- D. Increase in width

At the limit state of collapse, an RC beam is subjected to factored SF = 20 kN, factored torsional moment = 9 kN-m and factored flexural moment = 200 kN-m. The beam is 300 mm wide and has a gross depth of 425 mm, with an effective cover of 25 mm. The equivalent shear force (Ve) is_____ * 2 points

- 20
- 56
- 54
- (selected) 68
- Option 5

At the limit state of collapse, an RC beam is subjected to factored SF = 20 kN, factored torsional moment = 9 kN-m and factored flexural moment = 200 kN-m. The beam is 300 mm wide and has a gross depth of 425 mm, with an effective cover of 25 mm. The equivalent flexural moment (Meq) to designing longitudinal tension steel is_____ * 2 points

- 187 kN-m
- 209 kN-m
- 200 kN-m
- (selected) D. 213 kN-m

The diameter of the polygonal links or lateral ties shall not be less than..... * 2 points

- [ ] 6 mm
- [ ] max of A and D
- [ ] least of A and D
- [x] 1/4 diameter of larger longitudinal bar

The minimum number of longitudinal bars provided in a column shall be ..... in a rectangular column. * 2 points

- [ ] 6
- [x] 4
- [ ] 8
- [ ] 2

Helical reinforcement in circular column is provided in terms of * 2 points

- [x] Helix
- [ ] Links
- [ ] Stirrups
- [ ] Ties

A reinforced concrete column having helical reinforcement shall have at least ----- bars of longitudinal reinforcement within the helical reinforcement. * 2 points

- [ ] 4
- [x] 6
- [ ] 8
- [ ] 10
- [ ] Option 5

The ratio of effective length to unsupported length of a column when effectively held in position in both ends, to restrained against rotation at one end is * 2 points

- [x] 0.8
- [ ] 0.65
- [ ] 1.2
- [ ] 1.0

OBT-III

Design of Concrete Structure-I

Roll No *

43

Name *

Bheemashankar Rajashekhar Tukamali

For member subjected to bending and torsion two legged closed hoops enclosing the corner longitudinal bars shall have an area of cross-section Asv given by, * 2 points

- Asv = [(Tu.Sv/b1d1(0.47fy)] + [Vu.Su/2.5d1(0.47fy)]
- Asv = (Tu.Sv/b1d1(0.87fy) + Vu Tu)
- Asv(Tu.Sv/b1d1(0.85fy)
- **D. Asv = [(Tu.Sv/b1d1(0.87fy)] + [Vu.Su/2.5d1(0.87fy)]**

According to the steel beam theory of doubly reinforced beams Where depth of beam exceeds 750 mm the side face reinforcement shall be Provided along the two faces. The total area of such reinforcement shall not be Less than…….. % of web area. * 2 points

- **0.1**
- 0.15
- 0.2
- 0.25

From limiting deflection point of view, use of high strength steel in RC beam results in_____ * 2 points

- Reduction in depth
- No change in depth
- **Increase in depth**
- D. Increase in width

At the limit state of collapse, an RC beam is subjected to factored SF = 20 kN, factored torsional moment = 9 kN-m and factored flexural moment = 200 kN-m. The beam is 300 mm wide and has a gross depth of 425 mm, with an effective cover of 25 mm. The equivalent shear force (Ve) is_____ * 2 points

- 20
- 56
- 54
- **68**
- Option 5

At the limit state of collapse, an RC beam is subjected to factored SF = 20 kN, factored torsional moment = 9 kN-m and factored flexural moment = 200 kN-m. The beam is 300 mm wide and has a gross depth of 425 mm, with an effective cover of 25 mm. The equivalent flexural moment (Meq) to designing longitudinal tension steel is_____ * 2 points

- 187 kN-m
- 209 kN-m
- 200 kN-m
- **D. 213 kN-m**

The diameter of the polygonal links or lateral ties shall not be less than..... * 2 points

- [ ] 6 mm
- [ ] max of A and D
- [ ] least of A and D
- [x] 1/4 diameter of larger longitudinal bar

The minimum number of longitudinal bars provided in a column shall be ..... in a rectangular column. * 2 points

- [ ] 6
- [x] 4
- [ ] 8
- [ ] 2

Helical reinforcement in circular column is provided in terms of * 2 points

- [x] Helix
- [ ] Links
- [ ] Stirrups
- [ ] Ties

A reinforced concrete column having helical reinforcement shall have at least ----- bars of longitudinal reinforcement within the helical reinforcement. * 2 points

- [ ] 4
- [x] 6
- [ ] 8
- [ ] 10
- [ ] Option 5

The ratio of effective length to unsupported length of a column when effectively held in position in both ends, to restrained against rotation at one end is * 2 points

- [x] 0.8
- [ ] 0.65
- [ ] 1.2
- [ ] 1.0

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: OBT-2
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.3	CE55C.3	CE55C.3	CE55C.3	CE55C.3	CE55C.4	CE55C.4	CE55C.4	CE55C.4	CE55C.4	CE55C.3			CE55C.4		
			Max. Marks	2	2	2	2	2	2	2	2	2	2						
			Q. No. / Total Obtained Marks	Q1.1	Q1.2	Q1.3	Q1.4	Q1.5	Q1.6	Q1.7	Q1.8	Q1.9	Q1.10	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
202101053015889	211CE11008	SAYLI VIJAY ASHTUL	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044293	221CE12003	AISHWARYA ROHIDAS CHAVAN	**16**	2	2	2	2	2	2	0	2	2	0	10	10	100	10	6	60.00
202101053016558	211CE11029	NAMRATA DINKAR CHAVARE	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00
202101053016667	211CE11023	SANIKA GAJANAN DESHMUKHE	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00
202201053044272	221CE12024	KAJAL SHRAVAN KAMBLE	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016659	211CE11019	PRIYANKA PRATAP KARANDE	**16**	2	0	2	2	2	2	2	2	2	0	10	8	80.00	10	8	80.00
202101053016789	211CE11025	RUTUJA MAHESH KAWADE	**16**	2	0	2	2	2	2	2	2	2	0	10	8	80.00	10	8	80.00
202201053044526	221CE12022	PRIYANKA IRANNA KOLI	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016839	211CE11026	AISHWARYA PRADIP KUMBHAR	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016798	211CE11018	DIVYA RAJENDRA LATAKE	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016661	211CE11005	AAKANKSHA JAGANNATH MANE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016617	211CE11012	POOJA DADASAHEB NAGANE	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00
202101053016625	211CE11022	SNEHAL NAVNATH RONGE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016860	211CE11010	ALVIRA AMIN SHAIKH	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00
202101053016610	211CE11032	ANISHA AMAR SURVASE	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202201053044335	221CE12038	SHIVALINGAMMA CHANDRAKANT TENGALE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016831	211CE11014	RAMESH BAPU BANDGAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016834	211CE11004	AJAY BHAGWAT BANSODE	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00
202101053016657	211CE11031	PRATHMESH LAXMAN CHAVAN	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016849	211CE11030	SWARUP RAJARAM CHAVAN	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016578	211CE11011	SWAPNIL MAHADEV DHULAGUDE	**16**	2	2	2	2	2	2	0	2	2	0	10	10	100	10	6	60.00
202101053016724	211CE11007	VISHWAJEET SANJAY GHADGE	**16**	2	2	2	2	2	2	0	2	0	2	10	10	100	10	6	60.00
202201053044379	221CE12040	SAMARTH PRAKASH HIPPARGI	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016729	211CE11021	VITTHAL SAINATH HOTKAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053015906	211CE11017	PRATIK DADA KARE	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016869	211CE11028	ABHIJIT ASHOK KHALADKAR	**10**	2	2	2	2	2	0	0	0	0	0	10	10	100	10	0	NA
202201053044314	221CE12035	SANKET CHANDRAKANT LENDAVE	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016716	211CE11013	GOPAL DATTA MADANE	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202201053044383	221CE12045	RAHUL MANAGENI MASHALE	**18**	2	2	2	0	2	2	2	2	2	2	10	8	80.00	10	10	100
202101053016723	211CE11003	TUKARAM SHANKAR METAKARI	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00

202201053044347	221CE12015	AVINASH SHARANAPPA NILGAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044356	221CE12021	VIGHNAHAR SHARAD NILGAR	**18**	2	2	2	0	2	2	2	2	2	2	10	8	80.00	10	10	100
202201053044342	221CE12005	ABHISHEK SURESH NIMBAL	**18**	2	2	2	2	2	2	2	0	2	2	10	10	100	10	8	80.00
202201053044380	221CE12051	YASH SATISH NIMBALKAR	**18**	2	2	2	2	2	2	2	0	2	2	10	10	100	10	8	80.00
202201053044300	221CE12058	MAHESH LAXMAN PADVALE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016921	211CE11027	OM VIVEKANAND PATIL	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00
202101053016897	211CE11015	RAJ MOHAN RONGE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016926	211CE11002	AKASH SUBHASH SHEGAR	**18**	2	2	2	2	2	2	2	2	2	0	10	10	100	10	8	80.00
202101053016854	211CE11009	DATTATRAY MARUTI SHEJAL	**18**	2	2	2	2	2	2	0	2	2	2	10	10	100	10	8	80.00
202101053016900	211CE11024	YUVRAJ SITARAM SHINDE	**10**	0	0	0	0	0	2	2	2	2	2	10	0	NA	10	10	100
202201053044359	221CE12047	SURESH BHIMANNA SUNAGAR	**16**	2	0	2	2	2	2	2	2	2	0	10	8	80.00	10	8	80.00
202201053044366	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044360	221CE12039	SHRAVAN SURYAKANT WAGHAMODE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level
(Percentage of students scoring Marks >=60) = Level 1
(Percentage of students scoring Marks >=70) = Level 2
(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C.3	CE55C.4
No. of Students achieving Target Level	42	42
No. of Applicable Students	43	43
% Students achieving Target Level	97.67	97.67
Attainment	3	3

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: THIRD YEAR
DIVISION: A
COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)
TOOL NAME: OBT-3
TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.5	CE55C.5	CE55C.5	CE55C.5	CE55C.5	CE55C.6	CE55C.6	CE55C.6	CE55C.6	CE55C.6	CE55C.5			CE55C.6		
			Max. Marks	2	2	2	2	2	2	2	2	2	2						
			Q. No. / Total Obtained Marks	Q1.1	Q1.2	Q1.3	Q1.4	Q1.5	Q1.6	Q1.7	Q1.8	Q1.9	Q1.10	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
202101053015889	211CE11008	SAYLI VIJAY ASHTUL	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044293	221CE12003	AISHWARYA ROHIDAS CHAVAN	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016558	211CE11029	NAMRATA DINKAR CHAVARE	**14**	0	2	2	0	2	2	2	2	2	0	10	6	60.00	10	8	80.00
202101053016667	211CE11023	SANIKA GAJANAN DESHMUKHE	**16**	2	2	2	0	2	2	2	2	2	0	10	8	80.00	10	8	80.00
202201053044272	221CE12024	KAJAL SHRAVAN KAMBLE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016659	211CE11019	PRIYANKA PRATAP KARANDE	**16**	2	2	2	0	2	2	2	2	2	0	10	8	80.00	10	8	80.00
202101053016789	211CE11025	RUTUJA MAHESH KAWADE	**18**	2	2	2	2	2	2	2	2	0	2	10	10	100	10	8	80.00
202201053044526	221CE12022	PRIYANKA IRANNA KOLI	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016839	211CE11026	AISHWARYA PRADIP KUMBHAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016798	211CE11018	DIVYA RAJENDRA LATAKE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016661	211CE11005	AAKANKSHA JAGANNATH MANE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016617	211CE11012	POOJA DADASAHEB NAGANE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016625	211CE11022	SNEHAL NAVNATH RONGE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016860	211CE11010	ALVIRA AMIN SHAIKH	**12**	2	2	2	2	2	2	0	0	0	0	10	10	100	10	2	20.00
202101053016610	211CE11032	ANISHA AMAR SURVASE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044335	221CE12038	SHIVALINGAMMA CHANDRAKANT TENGALE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016831	211CE11014	RAMESH BAPU BANDGAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016834	211CE11004	AJAY BHAGWAT BANSODE	**16**	2	2	2	0	2	2	2	2	2	0	10	8	80.00	10	8	80.00
202101053016657	211CE11031	PRATHMESH LAXMAN CHAVAN	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016849	211CE11030	SWARUP RAJARAM CHAVAN	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016578	211CE11011	SWAPNIL MAHADEV DHULAGUDE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016724	211CE11007	VISHWAJEET SANJAY GHADGE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044379	221CE12040	SAMARTH PRAKASH HIPPARGI	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016729	211CE11021	VITTHAL SAINATH HOTKAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053015906	211CE11017	PRATIK DADA KARE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016869	211CE11028	ABHIJIT ASHOK KHALADKAR	**14**	2	2	0	2	0	2	2	0	2	2	10	6	60.00	10	8	80.00
202201053044314	221CE12035	SANKET CHANDRAKANT LENDAVE	**18**	2	2	2	0	2	2	2	2	2	2	10	8	80.00	10	10	100
202101053016716	211CE11013	GOPAL DATTA MADANE	**18**	2	2	2	0	2	2	2	2	2	2	10	8	80.00	10	10	100
202201053044383	221CE12045	RAHUL MANAGENI MASHALE	**18**	2	2	2	0	2	2	2	2	2	2	10	8	80.00	10	10	100
202101053016723	211CE11003	TUKARAM SHANKAR METAKARI	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044347	221CE12015	AVINASH SHARANAPPA NILGAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044356	221CE12021	VIGHNAHAR SHARAD NILGAR	**14**	2	2	2	0	2	0	2	0	2	2	10	8	80.00	10	6	60.00

202201053044342	221CE12005	ABHISHEK SURESH NIMBAL	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044380	221CE12051	YASH SATISH NIMBALKAR	**14**	0	2	2	2	0	2	2	2	2	0	10	6	60.00	10	8	80.00
202201053044300	221CE12058	MAHESH LAXMAN PADVALE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016921	211CE11027	OM VIVEKANAND PATIL	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016897	211CE11015	RAJ MOHAN RONGE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016926	211CE11002	AKASH SUBHASH SHEGAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016854	211CE11009	DATTATRAY MARUTI SHEJAL	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202101053016900	211CE11024	YUVRAJ SITARAM SHINDE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044359	221CE12047	SURESH BHIMANNA SUNAGAR	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044366	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100
202201053044360	221CE12039	SHRAVAN SURYAKANT WAGHAMODE	**20**	2	2	2	2	2	2	2	2	2	2	10	10	100	10	10	100

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level
(Percentage of students scoring Marks >=60) = Level 1
(Percentage of students scoring Marks >=70) = Level 2
(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE55C.5	CE55C.6
No. of Students achieving Target Level	43	42
No. of Applicable Students	43	43
% Students achieving Target Level	100	97.67
Attainment	3	3

Take Home Test
Question Paper and Answer Sheet

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Take Home Test (THT)

1. Question Paper
2. Answer sheet
3. Result

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Take Home Test (THT)

Question Paper

SVERI'S College of Engineering, Pandharpur

Department of Civil Engineering

T.Y.CIVIL THT Academic Year -2023-2024

Design of Concrete Structure-I

Div: - A

Day and Date: 30/09/2023 **Marks - 20**

CO	CO STATEMENT	BLOOMS LEVEL	MAX. MARKS
CE55C.2	Design various types of slabs viz. One-way slabs, two-way slabs, cantilever slabs as per is code.	BL 3	20

Instructions - I) All questions are compulsory.

II) Assume suitable data if required.

Q. 1	Solve the following	Marks	Related CO & Blooms Level	PI
1	Design a two-way slab of size 4.2 M X 5.5 M clear span carrying a live load 10 kN/M2 and load of water proofing of 70 mm thick brick bats treatment. The slab is continuous over 2 adjacent edges and other two edges are discontinuous use M25 concrete and Fe415 width of support is 250mm (Use IS code Method)	20	CO-2 & BL 3	3.1.1,2, 3 & 3.2.1 & 3.3.1

…….. All the Best……

SVERI'S College of Engineering, Pandharpur

SY B-Tech-B (Civil) THT-I Academic Year -2023-24

Surveying & Geomatics **SET - A**

Day and Date: Sunday & 17/09/2023 **Marks - 20**

Time- 12.30 pm - 01.30 pm **Duration–1 hr**

CO	CO STATEMENT	LEVEL	MAX. MARKS
CE31C.1	understand the temporary adjustments of modern surveying equipment and the attributes of leadership, working in the team and professional ethics while performing the surveying projects.	BL 2	10
CE31C.2	experiment with the surveying instruments such as theodolite for measurements of horizontal/ vertical/inclined distance, horizontal/ vertical angles and bearings	BL 3	10

Instructions - 1) ALL Questions are compulsory.

2) Assume Suitable Data If Required.

Q.1) Attempt the following (Related to CE31C.1& 2 & BL 2, 3) **(20)**

1. Write one example related to Block Contouring Calculations.
2. Write one example on Consecutive coordinates and Independent coordinates.

Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Take Home Test (THT)

Answer sheet

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: THT Date:

Name of Student: Chavan Aishwarya Rohidas

Class: TY Btech Division: A

Roll No.: 02 Subject: DCS-I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CESSC2	3	3.1.1.23 3.2.1 3.3.1	1	19						
			2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	19/20

1) Design a two-way slab of size 4.2m x 5.5m clear span carrying a live load 10kN/m² and load of water proofing of 20 mm thk brick bats treatment. Tk slab is Continuous over two Adjacent edge and other two edge are discontinuous Use M25 concrete & Fe415 width of Support is 250 mm. Use Is Code method.

Given Data

Slab size = 4.2 m × 5.5 m

LL = 10 KN/m²

fck = 20 mpa

fy = 415 mpa

bearing = 250 mm

thk at brick Bat = 70 mm

Step 1. The ratio at longer Span to shorter Span

$\frac{l_y}{l_x} = \frac{5.5}{4.2} = 1.3 < 2$

According to IS 456 annexeur D.1.11. P.N. 90. Slab is two way.

Step 2. Cal. eff depth at slab.

$\frac{\text{Span}}{d} = 20 \times mf$

$fs = 0.58 \times fy \times \frac{\text{Ast reqd}}{\text{Ast provided}}$

$fs = 0.58 \times 415 \times 1 = 240.7 \simeq 240$ mpa

IS 456-2000 P.N. 38 fig. No 4

$\frac{4200}{d} = 20 \times 1.45 \rightarrow d = 144.82$ mm

Assume $\phi = 10$ mm, clear Cover = 15 m

$D = 144.82 + 10/2 + 15 = 164.82 \simeq 170$ mm

$d_x = 170 - 20 = 150$ mm

$d_y = d_x - \phi = 150 - 10 = 140$ mm

Step 3. Cal. eff. span at Slab

a] for Shorter Span

eff length = clear span + d_x

= 4.2 + 0.15 = 4.35 m

eff. length = clear span + $\frac{\text{bearing}}{2} + \frac{\text{bearing}}{2}$

= 4.2 + 0.25/2 + 0.25/2 = 4.45 m

b] for longer span

eff length = clear span + dy
= 5.5 + 0.14 = 5.64 m

eff length = clear span + bearing/2 + bearing/2
= 5.5 + 0.25/2 + 0.25/2 = 5.75 m

adopt min (le)y = 5.64 m
and min (le)x = 4.35 m

Step 4 - Load calculation
Slab size = 1m x 1m

i. DL = 1 x 0.17 x 25 = 4.25 kN/m
ii LL = 10 kN/m² = 10 kN/m
iii FF = 1 x 0.07 x 25 = 1.75 kN/m

Total load = DL + LL + FF
= 4.25 + 10 + 1.75 = 16 kN/m
Ultimate load (Wu) = 1.5 x 16 = 24 kN/m

Step 5 · Cal. bending moments.
IS 456-2000 Pg. NO. 90 - Cl. NO. D.11

$\frac{ly}{lx} = \frac{5.64}{4.35} = 1.296$

from IS 456 - 2000 Pg. No. 91 Table No. 26

for αx	(+ve)	(-ve)
	1.2 — 0.045	1.2 — 0.06
	1.296 — ?	1.296 — ?
	1.3 — 0.049	1.3 — 0.065
	αx = 0.064	αy = 0.047
	αx+ = 0.048	αy+ 0.035

mx = αx wu / lex²

my = αy wu (ley)²

mx- = 0.064 x 24 x 4.35² = 29.06 kN.m
mx+ = 0.048 x 24 x 4.35² = 21.79 kN.m
my- = 0.047 x 24 x 4.35² = 21.34 kN.m
my+ = 0.035 x 24 x 4.35² = 15.89 kN.m

Check for depth

BM = MR

$21.79 \times 10^6 = 0.138 f_{ck} b d^2$

$21.79 \times 10^6 = 6.138 \times 25 \times 1000 \times d^2$

$d_{req} = 79.47$ mm

$d_{prov} = 150$ mm

$d_{req} < d_{Provi}$ — Hence safe

Step 6 = steel calculation

O] For shorter span

$$A_{st}\, x^t = 0.5 \frac{f_{ck} b d x}{f_y} \left[1 - \sqrt{1 - \frac{4.6 m x^t}{f_{ck} b d x^2}}\right]$$

$$= 0.5 \times \frac{25 \times 1000 \times 150}{415} \left[1 - \frac{4.6 \times 21.79 \times 10^6}{25 \times 1000 \times 150^2}\right]$$

$= 422.28\ mm^2$

$$A_{st}\, x^{\bar{}} = 0.5 \frac{f_{ck} b d x^{\bar{}}}{f_y} \left[1 - \frac{1 - 4.6 m x}{f_{ck} b d x^2}\right]$$

$$= 0.5 \times \frac{25 \times 1000 \times 150}{415} \left[1 - \sqrt{1 - \frac{4.6 \times 29.06 \times 10^6}{25 \times 1000 \times 150^2}}\right]$$

$A_{st} = 673.21\ mm^2$

Assume bar ϕ is 10mm

Area of single bar $= \frac{\pi}{4} \times 10^2 = 78.53\ mm^2$

No. of bar $= \frac{422.28}{78.53} = 6.37 \approx 6$ Nos

$A_{st\ prov} = 6 \times 78.53 = 471.18\ mm^2$

% of steel $= \frac{100\ A_{st\ prov}}{bd}$

$p_t = \frac{100 \times 471.18}{1000 \times 150} = 0.31\%$

Spacing Calculation

i) Spacing = Area of single bar x width / $A_{st\,y^+}$

$= \frac{78.53}{471.18} \times 1000$

$= 166.67 \simeq 160\,mm$

ii) $3d = 3 \times 150 = 450\,mm$

iii) 300 mm

Adopt min i.e 160mm provide ϕ 10mm @ 160 mm c/c along shorter span as main steel

b) for longer Span

$$A_{st\,y^+} = \frac{0.5\,f_{ck}\,bd_y}{f_y}\left[1-\sqrt{1-\frac{4.6\,m_{y^+}}{f_{ck}\,bd_y^2}}\right]$$

$$\frac{0.5 \times 25 \times 1000 \times 140}{415}\left[1-\sqrt{1-\frac{4.6 \times 15.89 \times 10^6}{25 \times 1000 \times 140^2}}\right.$$

$= 327.21\,mm^2$

$$A_{st\,y^-} = \frac{0.5\,f_{ck}\,bd_y}{f_y}\left[1-\sqrt{1-\frac{4.6 \times m_{y^-}}{f_{ck}\,bd_y^2}}\right]$$

$$= \frac{0.5 \times 25 \times 1000 \times 140}{415}\left[1-\sqrt{1-\frac{4.6 \times 21.34 \times 10^6}{25 \times 1000 \times 140^2}}\right)$$

$= 445.97\,mm^2$

Assume $\phi = 10\,mm$

Area of single bar $\pi/2 \times 10^2 = 78.53\,mm^2$

No. of bar $= \frac{327.21}{78.53} = 4.16 \simeq 5$ NO.S.

Ast Prov $= 5 \times 78.53 = 392.65\,mm^2$

Spacing Cal^n

i) Spacing $= \frac{\text{Area of single bar} \times \text{width}}{\text{Ast Prov}}$

$= \frac{78.53}{392.65} \times 1000 = 200\,mm$

ii) $3d_y = 3 \times 140 = 420\,mm$

iii) 300 mm

Adopt min i.e 200 mm

Provide 10mm ϕ @ 200mm c/c along longer span as main steel

Step 7 Torsion R/f

Length of torsion R/f

$$\frac{lx}{5} = \frac{4350}{5} = 870 \text{ mm}$$

Area of torsion R/f $= \frac{3}{4}$ Ast x

$= 3/4 \times 471.18$

$= 353.38 \text{ mm}^2$

Assume dia of bar = 8 mm

No. of bar $= \frac{353.58}{\pi/4 \times 8^2} = 7.03 \cong 8$ Nos.

Spacing $= \frac{870}{8} = 108.75 \cong 100$ mm

Step 8 · Checks.

1. check for shear

$\tau_v = \frac{V_u}{bd}$

$V_u = \frac{wl}{2} = \frac{24 \times 4.35}{2} = 52.2$ KN

$\tau_v = \frac{52.2 \times 10^3}{1000 \times 150} = 0.34$ mpa

$\tau_c = ?$

pt at Support $= \frac{0.31}{2} = 0.154$.

IS 456 - 2000 P.N. 73 Table No. 19.

$\tau_c = 0.29$ mpa

$\tau_v = 0.34$ mpa

$\tau_c < \tau_v$ ← Hence safe.

b] check for deflection

$$fs = 0.58 \times FS \times \frac{Ast\ req}{Ast\ Prov}$$

$$0.58 \times 415 \times \frac{422.28}{471.18}$$

$$215.71 \cong 190\ mpa$$

$pt = 0.31\%$

$fs = 190\ mpa$

$MF = 1.83$

$$\frac{Span}{d} = 20 \times mf$$

$$\frac{4350}{d} = 20 \times 1.83$$

$d_{req} = 118.88\ mm$

$d_{prov} = 150\ mm$

$d_{req} < d_{prov}$ — Hence Safe

C] Development Check

IS 456 : 2000 P.N. NO 42 . Cl. No. 26.2

$$Ld = \frac{\sigma s}{4 \tau bd} \qquad \sigma s = 0.87 fy = 0.87 \times 415 = 361.05.$$

$\tau bd = 1.2 \times 1.6 = 1.92$

$$Ld = \frac{10 \times 361.05}{4 \times 1.92}$$

$$1.3\left(\frac{M1}{V}\right) + Lo = ?$$

$$M1 = \frac{M4x}{2} = \frac{21.79}{2} = 10.89\ kN.m$$

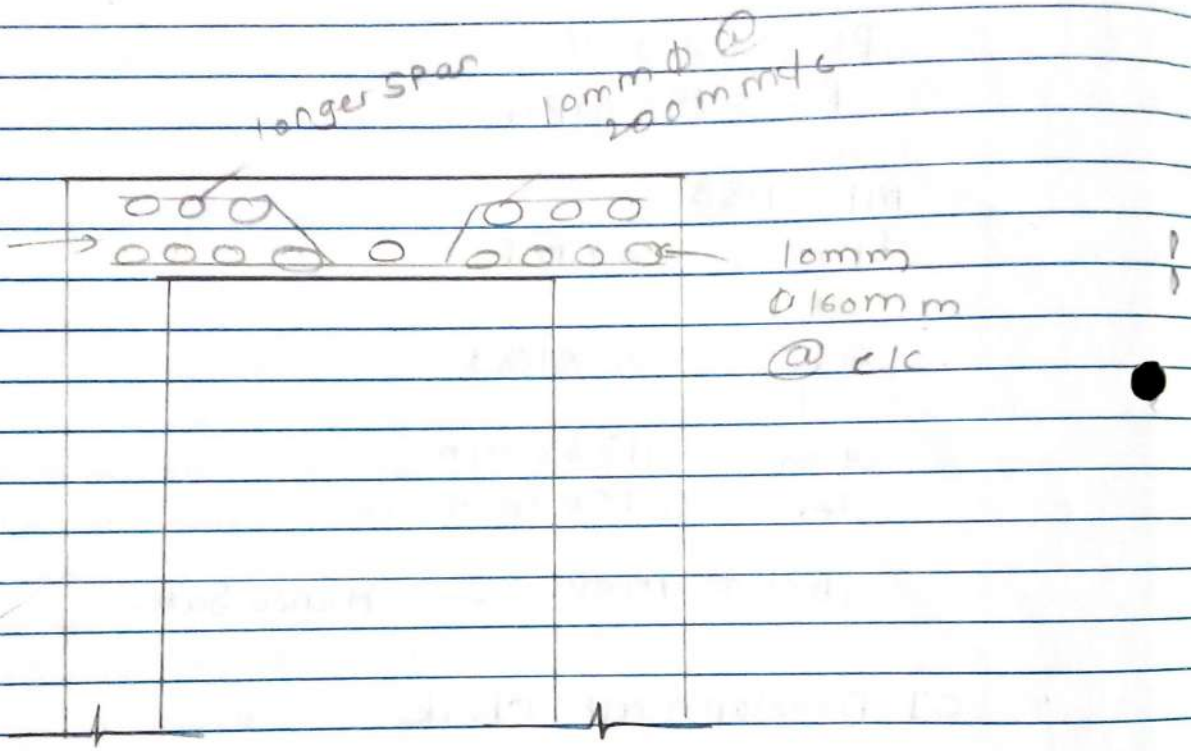
Lo = i) $dx = 150\ mm$

ii) $12\phi = 12 \times 10 = 120\ mm$

$Lo = 150\ mm$

$$1.3\left(\frac{10.89\times10^{6}}{52.8\times10^{3}}\right)+150 = 421.20\text{ mm}$$

$Ld > \frac{M_1}{V} + L_0$ — Hence Safe



19

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: THT Date:

Name of Student: Yuvraj shinde

Class: TY Division: A

Roll No.: 41 Subject: DCS-I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO5	3	31123	1	12						
		3.2.1 3.3.1	2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	12/20

9.

Given $f_{ck} = 25 N/mm^2$ $f_y = 415$

$LL = 10 kN/m^2$

Step ① The given slab is two ~~two~~ way

Step ② Cov. eff. depth

$\frac{span}{d} = 20 \times mf$

$\frac{4200}{d} = 20 \times mf$

$mf = 1.45 = pt = 0.11$

$\frac{4200}{d} = 20 \times 1.45$ $d = 1.44mm$

$$\frac{4200}{d} = 20 \times mf$$

$mf = 1.45 \quad pt = 0.3\%$

$$\frac{4200}{d} = 20 \times 1.45$$

$$\boxed{d = 144 mm}$$

$\phi = 10 mm \quad (C.15 mm)$

$$D = 144 + \frac{10}{2} + 15$$

$$= 164 mm$$

$D = 170 mm$

$dhe = 170 - \frac{10}{2} - 15 = 150 mm$

$dy = bz - \text{bar dia} = 150 - 10 = 140 mm$

Steps Cov. Eff. Span

According to Is 456: 2000

1) For shorter span

2) clear span + eff. span $= 4.2$ to Is.

$= 4.35 m \quad (1)$

b) clear span + $\frac{b}{2} + \frac{b}{2}$

$= 4.2 + \frac{0.25}{2} + \frac{0.25}{2} = 4.45 m$

$= 5.175$

④ Load calculation:

① Dead load = vol x density.

$= 0.17 \times 15$

$= 4.25 \text{ KN/mm}^2$.

② LL = 10KN/m^2.

③ FF = 0.07×25

$= 1.75 \text{ KN/m}$

total load = LL + DL + FF

$= 4.25 + 10 + 1.75$

$= 16 \text{ KN/m}$

ultimate load = $1.5 \times$ total load

$= 1.5 \times 16$

$= 24 \text{ KN/m}$

⑤ B.M. calculation:

$\frac{Ly}{Lx} = \frac{5.64}{4.45}$

$\frac{Ly}{Lx} = 1.26$

From IS 456:2000 PN 91

1.2 — 0.060

1.26 —

1.3 — 0.065

$x = 0.063$

$x_4 = 0.047$.

For 2nd condition.

1.2 — 0.052

1.26 —

1.3 = 0.056

$\alpha = 0.054$ $\alpha_{24} = 0.035$

B.M. for shorter span.

$1\ mm = \alpha_n \times w l_n^2$

$= 0.03 \times 24 \times (4.45)^2$

$= 29.46\ kN/m^2$

For longer span;

$M_y = \alpha_y \times \omega_u (l_y)^2$.

$= 0.047 \times 24 \times (4.45)^2$.

$M_y = 22.33\ kN.m$

check for depth

B.M. $= M.R$

$19.96 \times 10^6 = 0.198 \times f_{ck} \times b d_e^2$

$1.96 \times 10^6 = 0.198 \times 25 \times 1000 \times d_e^2$.

$d_e = 76.06\ mm$

$d_{prov} = 150\ mm$.

$d_{req} < d_{prov}$.

For second condition.

$M_n = 0.45 \times \omega l / (d_e^2)$

$= 0.041 \times 4 \times 4.45^2$

$M_n = 1.566\ kN/m$

$M_y = \alpha_y \times w_u (l_x)^2$

$= 0.035 \times 21.4 \times (4.45)^2$

$M_y = 16.63$ kN·m

(c) Ast calculation:

For shorter span

$$A_{st} = \frac{0.5 f_{ck} b d}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_{ux}}{f_{ck} b d^2}}\right]$$

$$= \frac{0.5 \times 25 \times 170 \times 1000}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 29.96 \times 10^6}{25 \times 1000 \times 170}}\right]$$

$A_{st x} = 514 mm^2$

Column 0.10 mm dia.

No. of bar $= \frac{A_{st}}{\frac{\pi}{4} \times 16^2}$

$= \frac{514}{\frac{\pi}{4} \times 16^2}$

$= 6.54$

$= 7$ NOs.

Ast prov $= 7 \times 78.58$.

$= 550.06 mm^2$

For my Ast calculation,

$$A_{sty} = \frac{0.5 f_{ck} b d}{f_y}\left[1 - \sqrt{1 - \frac{4.6 f_{ck} m_{uy}}{f_{ck} b d^2}}\right]$$

$= 376.54$

Assume 10mm bar dia.

No. of bar = $\frac{Ast_y}{Ast \text{ of single bar.}}$

$= \frac{376.17}{\frac{\pi}{4} \times 10^2}$.

No. of bar.

Ast prov = $2 \times 10^2 \times \frac{\pi}{4}$

$= 392.69 mm^2$

Ast calc

$Ast_x = \frac{0.5 f_{ck} bd}{f_{ck}} \left[1 - \sqrt{1 - \frac{4.6 M_{42}}{f_{ck} bd^2}}\right]$,

$= \frac{0.5 \times 25 \times 1000 \times 170}{415} \left[1 - \sqrt{1 - \frac{4.6 \times 25560 \times 10^6}{25 \times 1000 \times 170^2}}\right]$

$= 436.91 mm^2$

No. of bar = $\frac{Ast}{Ast \text{ of single bar}}$

$= \frac{436.91}{\frac{\pi}{4} \times 10^2}$

$= 6 Nos$

Ast prov. $= 6 \times \frac{\pi}{4} \times 10^2$.

$= 471.23 mm^2$.

m_y = Ast col o.

$$Ast_y = 0.5 f_{ck} L bd \left[1 - \sqrt{1 - \frac{4.6 M_{ux}}{f_{ck} bd^2}}\right]$$

$$= \frac{0.5 \times 25 \times 1000 \times 190}{415} \left[1 - \sqrt{1 - \frac{4.6 \times 16.6 \times 10^6}{25 \times 1000 \times 170^2}}\right]$$

$Ast_y = 278.65 mm^2$.

ass. 10mm ϕ bar dia.

No. of bar $= \frac{Ast}{\text{Area of single bar}}$.

$$= \frac{278.65}{\frac{\pi}{4} \times 10^2}$$

$= 9$ Nos.

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

ISE / Unit Test No.: THT Date:

Name of Student: Aishwarya Pradip Kumbhar

Class: T.Y. B.Tech Division: A

Roll No.: 09 Subject: DCS - I

Sign of Supervisor: Marks:

CO	BL	PI Code	Q.No.	a	b	c	d	e	f	Total
CO5C2	3	31.123	1	20						20
~~CO5C2~~	~~3~~	32.1 33.1	2							
			3							
			4							
			5							
			6							
			7							
			8							
									Grand Total	20/20

1) Design a two-way slab of size 4.2m x 5.5m clear span carrying a live load 10 kN/m² and load of water proofing of 70mm thk. brick bats treatment. The slab is continuous over two Adjavent edge and other two edge are discontinuous use m_{25} concrete and fe415 width of support is 250mm, use IS code method.

→ Given data,

Slab size = 4.2m x 5.5m

LL = 10kN/m²

fck = 20mpa

fy = 415 mpa

bearing = 250 mm

thk at brick Bar = 70mm

Step 1 The ratio at longer span to shorter span

$$\frac{l_y}{l_x} = \frac{5.5}{4.2} = 1.3 < 2$$

According to IS 456 annexur D1 11
P.N 90 slab is two way

step 2 cal. eff. depth at slab

$$\frac{span}{d} = 20 \times mf$$

$$fs = 0.58 \times fy \times \frac{Ast\ req^d}{Ast\ provided}$$

$$fs = 0.58 \times 415 \times 1$$

$$= 240.7 \cong 240\ mpa$$

IS 456-2000 P.N. 38 fig No. 4

$$\frac{420}{d} = 20 \times 1.45$$

$$\boxed{d = 144.82\ mm}$$

Assume $\phi = 10mm$, clear cover = 15m

$$D = 144.82 + \frac{10}{2} + 15$$

$$= 164.82 \cong 170\ mm$$

$$dx = 170 - 20$$

$$= 150\ mm$$

$$dy = dx - \phi$$

$$= 150 - 10$$

$$= 140\ mm$$

step 3 cal eff. span at slab

a) for shorter span

eff length = clear span + dx

= 4.2 + 0.15

= 4.35 m

eff. length = clear span + $\frac{bearing}{2}$ + $\frac{bearing}{2}$

= 4.2 + $\frac{0.25}{2}$ + $\frac{0.25}{2}$

= 4.45 m

b) for longer span

eff length = clear span + dy

= 5.5 + 0.14

= 5.64 m

eff. length = clear span + bearing/2 + bearing/2

= 5.5 + 0.25/2 + 0.25/2

= 5.75 m

adopt min (le) y = 5.64 m

and min (le)x = 4.35 m

step 4 load calculation

Slab size = 1m x 1m

i) DL = 1 X 0.17 x 25 = 4.25 KN/m

ii) LL = 10 KN/m² = 10 KN/m

iii) FF = 1 X 0.07 x 25 = 1.75 KN/m

total load = DL + LL + FF

= 4.25 + 10 + 1.75

= 16 KN/m

Ultimate load = (Wu) = 1.5 x 16 = 24 KN/m

step 5 cal. bending moments

IS 456 - 200 P.g. No - 90 cl NO = 26

For αx (+ve)	(-ve)
1.2 - 0.045	1.2 - 0.06
1.296 - ?	1.296 - ?
1.3 - 0.049	1.3 - 0.065

αx = 0.064 αx̄ = 0.047

αx⁺ = 0.048 αy = 0.035

mx = αx Wu / lex²

my = αy Wu (ley)²

mx̄ = 0.064 x 24 x 4.35² = 29.06 KN.m

mx⁺ = 0.048 x 24 x 4.35² = 21.79 KN.m

my⁻ = 0.047 x 24 x 4.35² = 21.34 KN.m

my⁺ = 0.035 x 24 x 4.35² = 15.89 KN.m

check for depth

$BM = MR$

$21.79 \times 10^6 = 0.138\ f_{ck}\ bd^2$

$21.79 \times 10^6 = 6.138 \times 25 \times 1000 \times d^2$

$d_{req} = 79.47\ mm$

$d_{prov} = 150\ mm$

$d_{req} < d_{provi}$ — Hence safe

step 6 steel calculation

a) for shorter span

$$A_{st}\ x^t = \frac{0.5\ f_{ck}\ bdx}{f_y}\left[1 - \sqrt{1 - \frac{4.6\ m x^t}{f_{ck}\ bdx^2}}\right]$$

$$= \frac{0.5 \times 25 \times 1000 \times 150}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 21.79 \times 10^6}{25 \times 1000 \times 150^2}}\right]$$

$$= 422.28\ mm^2$$

$$A_{st}\ x^- = \frac{0.5 f_{ck}\ bdx}{f_y}\left[1 - \sqrt{1 - \frac{4.6\ m x^-}{f_{ck}\ bdx^2}}\right]$$

$$= \frac{0.5 \times 25 \times 1000 \times 150}{415}\left[1 - \sqrt{1 - \frac{4.6 \times 29.06 \times 10^6}{25 \times 1000 \times 150^2}}\right]$$

$A_{st} = 673.21\ mm^2$

Assume bar ϕ is 10mm

Area at single bar $= \frac{\pi}{4} \times 10^2 = 78.53\ mm^2$

No. of bar $= \frac{422.28}{78.53} = 6.37 \simeq 6$ NOS

$A_{st\ prov} = 6 \times 78.53 = 471.18\ mm^2$

% of steel $= \frac{100\ A_{st\ prov}}{bd}$

$= \frac{100 \times 471.18}{1000 \times 150}$

$= 0.31\%$

Spacing calculation

i) Spacing = Area of single bar x width

$= \frac{78.53}{471.18} \times 1000$

$= 166.67 \simeq 160mm$

ii) $3d = 3 \times 150 = 450mm$

iii) 300mm

Adopt min i.e 160mm provide ϕ 10mm @ 160mm c/c along shorter span as main steel

b) for longer span

$$Ast\ y^+ = \frac{0.5\ fck\ bdy}{fy}\left[1 - \sqrt{\frac{1-4.6\ my^+}{fck\ bdy^2}}\right]$$

$$= \frac{0.5 \times 25 \times 1000 \times 140}{415}\left[1 - \sqrt{\frac{1 - 4.6 \times 15.89 \times 10^6}{25 \times 1000 \times 140^2}}\right]$$

$= 327.21\ mm^2$

$$Ast\ y^- = \frac{0.5\ Fck\ bdy}{fy}\left[1 - \sqrt{\frac{1 - 4.6 \times my^-}{Fck\ bdy^2}}\right]$$

$$= \frac{0.5 \times 25 \times 1000 \times 140}{415}\left[1 - \sqrt{\frac{1 - 4.6 \times 21.34 \times 10^6}{25 \times 1000 \times 140^2}}\right]$$

$= 445.97\ mm^2$

Assume $\phi = 10mm$

Area of single bar $= \frac{\pi}{4} \times 10^2 = 78.53\ mm^2$

No. of bar $= \frac{327.21}{78.53} = 4.16 \simeq 5$ no's

Ast prov $= 5 \times 78.53 = 392.65\ mm^2$

Spacing cal^n

i) Spacing $= \frac{\text{Area of single bar} \times \text{width}}{\text{Ast prov}}$

$= \frac{78.53}{392.65} \times 1000$

$= 200mm$

ii) $3dy = 3 \times 140 = 420mm$

iii) 300mm

Adopt min i.e 200mm

Provide 10mm ϕ @ 200mm c/c along longer span as main steel.

Step 7 Torsion R/f

Length of torsion R/f

$$\frac{lx}{5} = \frac{4350}{5} = 870 \text{ mm}$$

Area of torsion R/f $= \frac{3}{4}$ Ast x

$$= \frac{3}{4} \times 471.18$$

$$= 353.38 \text{ mm}^2$$

Assume dia. of bar = 8mm

$$\text{No. of bar} = \frac{353.58}{\pi/4 \times 8^2} = 7.03 \simeq 8 \text{ no's}$$

$$\text{Spacing} = \frac{870}{8} = 108.75 \simeq 100mm$$

Step 8 check

1. check for shear

$$\tau_v = \frac{V_u}{bd}$$

$$V_u = \frac{wl}{2} = \frac{24 \times 2.35}{2} = 52.2 \text{ kN}$$

$$\tau_v = \frac{52.2 \times 10^3}{1000 \times 150} = 0.34 \text{ mpa}$$

$\tau_c = ?$

Pt at support $= \frac{0.31}{2} = 0.15\%$

~~IS~~

IS 456 - 2000 PN

73 table No. 19

$\tau_c = 0.29$ mpa

$\tau_v = 0.34$ mpa

$\tau_c < \tau_v$ — Hence safe

b) check for deflection.

$$FS = 0.58 \times FS \times \frac{Ast\ req}{Ast\ prov}$$

$$= 0.58 \times 415 \times \frac{422.28}{471.98}$$

$$= 215.17 \cong 190 \text{ mpa}$$

$pt = 0.31\%$

$FS = 190$ mpa

$mf = 1.83$

$$\frac{span}{d} = 20 \times mf$$

$$\frac{4350}{d} = 20 \times 1.83$$

$d_{req} = 118.88$ mm

$d_{prov} = 150$ mm

$d_{req} < d_{prov}$ — Hence safe

c] Development check

IS 456: 2000 P.N. 42 Cl. No. 26.2

$$Ld = \frac{\delta s}{4 \tau bd}$$

$$\delta s = 0.87 Fy$$

$$= 0.87 \times 415$$

$$= 361.05$$

$$\tau bd = 1.2 \times 1.6$$

$$= 1.92$$

$$Ld = \frac{10 \times 361.05}{4 \times 1.92}$$

$$1.3 \left(\frac{m1}{V}\right) + Lo = ?$$

$$m_1 = \frac{mux}{2} = \frac{21.79}{2} = 10.89 \text{ KN m}$$

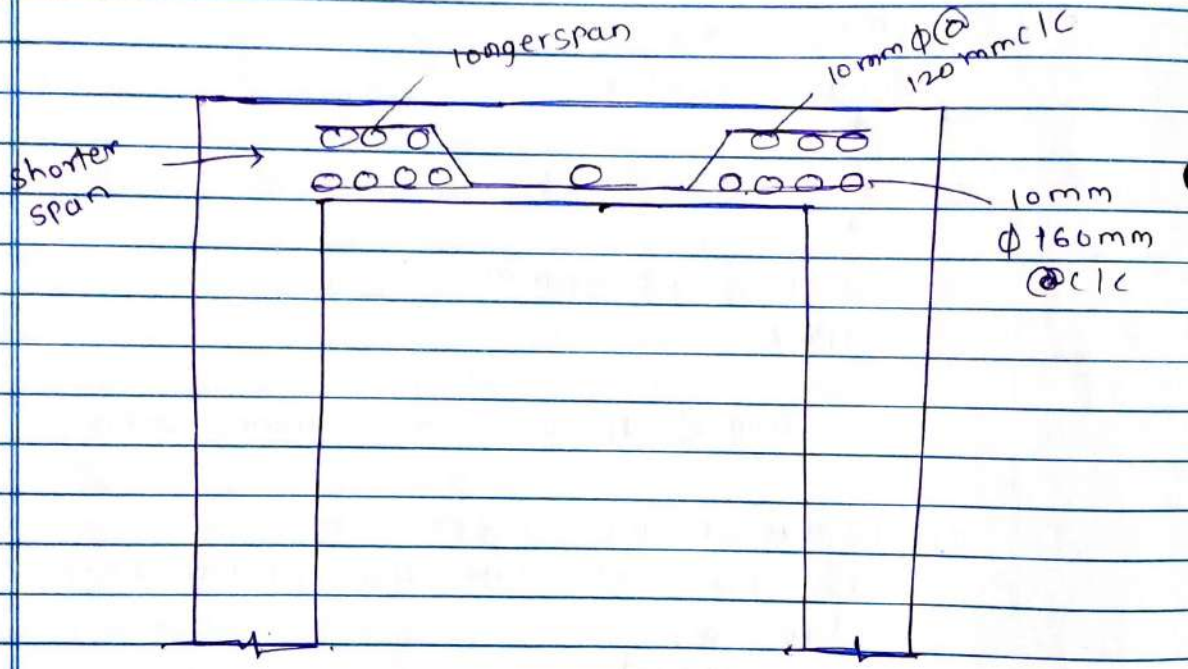
L_o = 1) d_x = 150 mm

2) 12ϕ = 12×10 = 120 mm

3) L_o = 150 mm

$$1.3\left(\frac{10.89 \times 10^6}{52.2 \times 10^3}\right) + 150 = 421.20 \text{ mm}$$

$L_d > \frac{m_1}{v} + L_o$ —— Hence safe



Shri Vithal Education & Research Institute's
College of Engineering, Pandharpur

Take Home Test (THT)

Result

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR

TOOL CO ATTAINMENT REPORT

ACADEMIC YEAR: 2023-24

DEPARTMENT: CIVIL ENGINEERING

PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING

CLASS: THIRD YEAR

DIVISION: A

COURSE: DESIGN OF CONCRETE STRUCTURES I (CE55C)

TOOL NAME: THT-1

TOOL MAX. MARKS: 20

PRN NO.	Student Code	Name of Student	Linked CO	CE55C.2	CE55C.2		
			Max. Marks	20			
			Q. No. / Total Obtained Marks	Q1	Max. Marks	Obtained Marks	% Marks
202101053015889	211CE11008	SAYLI VIJAY ASHTUL	**20**	20	20	20	100
202201053044293	221CE12003	AISHWARYA ROHIDAS CHAVAN	**19**	19	20	19	95.00
202101053016558	211CE11029	NAMRATA DINKAR CHAVARE	**19**	19	20	19	95.00
202101053016667	211CE11023	SANIKA GAJANAN DESHMUKHE	**18**	18	20	18	90.00
202201053044272	221CE12024	KAJAL SHRAVAN KAMBLE	**20**	20	20	20	100
202101053016659	211CE11019	PRIYANKA PRATAP KARANDE	**19**	19	20	19	95.00
202101053016789	211CE11025	RUTUJA MAHESH KAWADE	**16**	16	20	16	80.00
202201053044526	221CE12022	PRIYANKA IRANNA KOLI	**20**	20	20	20	100
202101053016839	211CE11026	AISHWARYA PRADIP KUMBHAR	**20**	20	20	20	100
202101053016798	211CE11018	DIVYA RAJENDRA LATAKE	**19**	19	20	19	95.00
202101053016661	211CE11005	AAKANKSHA JAGANNATH MANE	**19**	19	20	19	95.00
202101053016617	211CE11012	POOJA DADASAHEB NAGANE	**19**	19	20	19	95.00
202101053016625	211CE11022	SNEHAL NAVNATH RONGE	**19**	19	20	19	95.00
202101053016860	211CE11010	ALVIRA AMIN SHAIKH	**16**	16	20	16	80.00
202101053016610	211CE11032	ANISHA AMAR SURVASE	**19**	19	20	19	95.00
202201053044335	221CE12038	SHIVALINGAMMA CHANDRAKANT TENGALE	**20**	20	20	20	100
202101053016831	211CE11014	RAMESH BAPU BANDGAR	**18**	18	20	18	90.00
202101053016834	211CE11004	AJAY BHAGWAT BANSODE	**18**	18	20	18	90.00
202101053016657	211CE11031	PRATHMESH LAXMAN CHAVAN	**20**	20	20	20	100
202101053016849	211CE11030	SWARUP RAJARAM CHAVAN	**20**	20	20	20	100
202101053016578	211CE11011	SWAPNIL MAHADEV DHULAGUDE	**18**	18	20	18	90.00
202101053016724	211CE11007	VISHWAJEET SANJAY GHADGE	**16**	16	20	16	80.00
202201053044379	221CE12040	SAMARTH PRAKASH HIPPARGI	**20**	20	20	20	100
202101053016729	211CE11021	VITTHAL SAINATH HOTKAR	**16**	16	20	16	80.00
202101053015906	211CE11017	PRATIK DADA KARE	**12**	12	20	12	60.00
202101053016869	211CE11028	ABHIJIT ASHOK KHALADKAR	**16**	16	20	16	80.00

202201053044314	221CE12035	SANKET CHANDRAKANT LENDAVE	**16**	16	20	16	80.00
202101053016716	211CE11013	GOPAL DATTA MADANE	**16**	16	20	16	80.00
202201053044383	221CE12045	RAHUL MANAGENI MASHALE	**19**	19	20	19	95.00
202101053016723	211CE11003	TUKARAM SHANKAR METAKARI	**16**	16	20	16	80.00
202201053044347	221CE12015	AVINASH SHARANAPPA NILGAR	**19**	19	20	19	95.00
202201053044356	221CE12021	VIGHNAHAR SHARAD NILGAR	**19**	19	20	19	95.00
202201053044342	221CE12005	ABHISHEK SURESH NIMBAL	**20**	20	20	20	100
202201053044380	221CE12051	YASH SATISH NIMBALKAR	**16**	16	20	16	80.00
202201053044300	221CE12058	MAHESH LAXMAN PADVALE	**16**	16	20	16	80.00
202101053016921	211CE11027	OM VIVEKANAND PATIL	**16**	16	20	16	80.00
202101053016897	211CE11015	RAJ MOHAN RONGE	**16**	16	20	16	80.00
202101053016926	211CE11002	AKASH SUBHASH SHEGAR	**16**	16	20	16	80.00
202101053016854	211CE11009	DATTATRAY MARUTI SHEJAL	**16**	16	20	16	80.00
202101053016900	211CE11024	YUVRAJ SITARAM SHINDE	**12**	12	20	12	60.00
202201053044359	221CE12047	SURESH BHIMANNA SUNAGAR	**17**	17	20	17	85.00
202201053044366	221CE12028	BHEEMASHANKAR RAJASHEKHAR TUKAMALI	**20**	20	20	20	100
202201053044360	221CE12039	SHRAVAN SURYAKANT WAGHAMODE	**19**	19	20	19	95.00

Number of Students: 43

Tool CO Attainment

Target Level(%): 60

Attainment Level
(Percentage of students scoring Marks >=60) = Level 1
(Percentage of students scoring Marks >=70) = Level 2
(Percentage of students scoring Marks >=80) = Level 3

Linked CO	**CE55C.2**
No. of Students achieving Target Level	**43**
No. of Applicable Students	**43**
% Students achieving Target Level	**100**
Attainment	**3**

Project/ Seminar
CO – PO Linking and Rubrics

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
COURSE CO INFORMATION REPORT
ACADEMIC YEAR: 2023-24
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: FOURTH YEAR
SEMESTER: SEMESTER II
DIVISION: A
COURSE: PROJECT WORK (CE8P)

Sr. No.	CO Code	CO Statements	Bloom's Level
1	CE8P.1	IDENTIFY AND FORMULATE CIVIL ENGINEERING PROBLEMS TO MEET DESIRED NEED WITHIN REALISTIC CONSTRAINTS	BL6 CREATE
2	CE8P.2	DESIGN THE SOLUTION USING MODERN DESIGN TOOLS AND TECHNIQUES WITH THE UNDERSTANDING OF THE IMPACT OF ENGINEERING SOLUTIONS IN A GLOBAL, ECONOMIC, ENVIRONMENTAL, AND SOCIETAL CONTEXT	BL6 CREATE
3	CE8P.3	DEVELOP AN ABILITY TO WORK ON MULTIDISCIPLINARY ENVIRONMENT TO EVALUATE THE ECONOMIC AND FINANCIAL PERFORMANCE OF AN ENGINEERING ACTIVITY	BL5 EVALUATE
4	CE8P.4	BUILD MODELS, PROTOTYPES AND CONDUCT VARIOUS EXPERIMENTS TO DEVELOP DIVERSE SET OF DESIGN SOLUTIONS WITH APPROPRIATE CONSIDERATION FOR SAFETY	BL6 CREATE
5	CE8P.5	BREAK DOWN A COMPLEX PROBLEM INTO PARTS AND ANALYZE THE RELATIONSHIPS BETWEEN THE DIFFERENT PARTS OF COMPLEX PROBLEM	BL4 ANALYZE
6	CE8P.6	SHOW AN ABILITY TO COMMUNICATE EFFECTIVELY IN TEAM AND PRESENT RESULTS AS A TEAM, WITH SMOOTH INTEGRATION, SUBSTANTIATED CONCLUSIONS AND DOCUMENTATION OF PROJECT WORK	BL3 APPLY

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
COURSE PO MAPPING INDEX REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: FOURTH YEAR
DIVISION: A
TERM: TERM II
COURSE: PROJECT WORK (CE8P)

Sr. No.	CO Code	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CE8P.1	IDENTIFY AND FORMULATE CIVIL ENGINEERING PROBLEMS TO MEET DESIRED NEED WITHIN REALISTIC CONSTRAINTS	3	3	3	2	NA	NA	NA	NA	3	NA	NA	2	2	3	2
2	CE8P.2	DESIGN THE SOLUTION USING MODERN DESIGN TOOLS AND TECHNIQUES WITH THE UNDERSTANDING OF THE IMPACT OF ENGINEERING SOLUTIONS IN A GLOBAL, ECONOMIC, ENVIRONMENTAL, AND SOCIETAL CONTEXT	NA	3	3	2	3	NA	2	3	3	NA	NA	3	3	2	3
3	CE8P.3	DEVELOP AN ABILITY TO WORK ON MULTIDISCIPLINARY ENVIRONMENT TO EVALUATE THE ECONOMIC AND FINANCIAL PERFORMANCE OF AN ENGINEERING ACTIVITY	NA	NA	NA	3	NA	3	2	NA	3	NA	3	3	2	3	1
4	CE8P.4	BUILD MODELS, PROTOTYPES AND CONDUCT VARIOUS EXPERIMENTS TO DEVELOP DIVERSE SET OF DESIGN SOLUTIONS WITH APPROPRIATE CONSIDERATION FOR SAFETY	NA	NA	3	NA	3	NA	NA	2	3	3	NA	2	1	2	3
5	CE8P.5	BREAK DOWN A COMPLEX PROBLEM INTO PARTS AND ANALYZE THE RELATIONSHIPS BETWEEN THE DIFFERENT PARTS OF COMPLEX PROBLEM	3	3	3	2	NA	NA	3	2	3	NA	NA	2	3	2	3
6	CE8P.6	SHOW AN ABILITY TO COMMUNICATE EFFECTIVELY IN TEAM AND PRESENT RESULTS AS A TEAM, WITH SMOOTH INTEGRATION, SUBSTANTIATED CONCLUSIONS AND DOCUMENTATION OF PROJECT WORK	NA	3	3	NA	3	NA	NA	NA	3	3	NA	3	2	3	2

Course PO Matrix

Sr. No.	Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CE8P	PROJECT WORK	3	3	3	2.25	3	3	2.33	2.33	3	3	3	2.5	2.17	2.5	2.33

SVERI'S COLLEGE OF ENGINEERING, PANDHARPUR
TOOL CO ATTAINMENT REPORT
ACADEMIC YEAR: 2023-24
DEPARTMENT: CIVIL ENGINEERING
PROGRAM: UNDER GRADUATE IN CIVIL ENGINEERING
CLASS: FOURTH YEAR
DIVISION: A
COURSE: PROJECT WORK (CE8P)
TOOL NAME: PROJECT

TOOL MAX. MARKS: 150

Name of Student	Linked CO	CE8P.1, CE8P.2, CE8P.3, CE8P.4	CE8P.1, CE8P.3, CE8P.4	CE8P.1, CE8P.2, CE8P.3, CE8P.4, CE8P.5, CE8P.6	CE8P.1, CE8P.2, CE8P.3, CE8P.4, CE8P.5, CE8P.6	CE8P.1, CE8P.2, CE8P.3, CE8P.4, CE8P.5, CE8P.6	CE8P.1, CE8P.2, CE8P.3, CE8P.4, CE8P.5, CE8P.6	CE8P.1			CE8P.2			CE8P.3			CE8P.4			CE8P.5			CE8P.6		
	Max. Marks	30	30	30	30	15	15																		
	Rubrics No. / Total Obtained Marks	R1	R2	R3	R4	R5	R6	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks	Max. Marks	Obtained Marks	% Marks
SNEHAL SHANKAR AMBURE	**143**	30	28	30	28	13	14	150	143	95.33	120	115	95.83	150	143	95.33	150	143	95.33	90	85	94.44	90	85	94.44
HARSHADA SUNIL GHOLVE	**143**	30	28	30	28	13	14	150	143	95.33	120	115	95.83	150	143	95.33	150	143	95.33	90	85	94.44	90	85	94.44
VAISHNAVI VIJAY HONMANE	**130**	25	25	25	25	15	15	150	130	86.67	120	105	87.50	150	130	86.67	150	130	86.67	90	80	88.89	90	80	88.89
SHWETA HANAMANT JADHAV	**144**	30	29	30	28	13	14	150	144	96.00	120	115	95.83	150	144	96.00	150	144	96.00	90	85	94.44	90	85	94.44
PRANALI RAMESH JAHIR	**138**	28	26	30	28	13	13	150	138	92.00	120	112	93.33	150	138	92.00	150	138	92.00	90	84	93.33	90	84	93.33
ADISHAKTI ABASAHEB JAWADE	**132**	25	25	27	25	15	15	150	132	88.00	120	107	89.17	150	132	88.00	150	132	88.00	90	82	91.11	90	82	91.11
ROHINI RAJARAM KADAM	**143**	30	28	30	28	13	14	150	143	95.33	120	115	95.83	150	143	95.33	150	143	95.33	90	85	94.44	90	85	94.44
BHAGYASHRI RAJABHAU KONDHARE	**130**	25	25	25	25	15	15	150	130	86.67	120	105	87.50	150	130	86.67	150	130	86.67	90	80	88.89	90	80	88.89
SAKSHI MAHADEV KORAKE	**143**	30	28	30	28	13	14	150	143	95.33	120	115	95.83	150	143	95.33	150	143	95.33	90	85	94.44	90	85	94.44
CHAITRALI MILIND KULKARNI	**141**	29	28	30	28	13	13	150	141	94.00	120	113	94.17	150	141	94.00	150	141	94.00	90	84	93.33	90	84	93.33
MAYURI TUKARAM MALI	**144**	30	29	30	28	13	14	150	144	96.00	120	115	95.83	150	144	96.00	150	144	96.00	90	85	94.44	90	85	94.44
RUTUJA RAJABHAU PAWAR	**143**	30	28	30	28	13	14	150	143	95.33	120	115	95.83	150	143	95.33	150	143	95.33	90	85	94.44	90	85	94.44
RESHMA RAJENDRA SADIGLE	**134**	25	27	27	25	15	15	150	134	89.33	120	107	89.17	150	134	89.33	150	134	89.33	90	82	91.11	90	82	91.11
MANASI MAHADEV SALGAR	**141**	29	28	30	28	13	13	150	141	94.00	120	113	94.17	150	141	94.00	150	141	94.00	90	84	93.33	90	84	93.33
POOJA SAHEBRAO SHINDE	**136**	25	27	27	27	15	15	150	136	90.67	120	109	90.83	150	136	90.67	150	136	90.67	90	84	93.33	90	84	93.33
MADHURI RAJARAM SHINDE	**147**	29	29	29	30	15	15	150	147	98.00	120	118	98.33	150	147	98.00	150	147	98.00	90	89	98.89	90	89	98.89
SUNAYANA NAGNATH THAKARE	**128**	25	25	26	25	13	14	150	128	85.33	120	103	85.83	150	128	85.33	150	128	85.33	90	78	86.67	90	78	86.67
MINAL SURESH THENGIL	**137**	26	27	27	27	15	15	150	137	91.33	120	110	91.67	150	137	91.33	150	137	91.33	90	84	93.33	90	84	93.33
SAKSHI SUJIT UBALE	**140**	28	28	30	28	13	13	150	140	93.33	120	112	93.33	150	140	93.33	150	140	93.33	90	84	93.33	90	84	93.33
ASHISH RAJU ATKALE	**136**	30	28	26	25	13	14	150	136	90.67	120	108	90.00	150	136	90.67	150	136	90.67	90	78	86.67	90	78	86.67
SHAHID SADIK BAGWAN	**134**	25	27	27	25	15	15	150	134	89.33	120	107	89.17	150	134	89.33	150	134	89.33	90	82	91.11	90	82	91.11
SURAJ SADASHIV BANGALE	**135**	25	27	27	26	15	15	150	135	90.00	120	108	90.00	150	135	90.00	150	135	90.00	90	83	92.22	90	83	92.22
KRUSHNA SAMBHAJI BHOSALE	**128**	25	25	26	25	13	14	150	128	85.33	120	103	85.83	150	128	85.33	150	128	85.33	90	78	86.67	90	78	86.67
ROHIT SHAHAJI BICHUKALE	**146**	29	29	29	30	14	15	150	146	97.33	120	117	97.50	150	146	97.33	150	146	97.33	90	88	97.78	90	88	97.78
CHAITANYA GOPAL CHANDOLE	**121**	22	23	24	25	13	14	150	121	80.67	120	98	81.67	150	121	80.67	150	121	80.67	90	76	84.44	90	76	84.44
ROHAN BAPU CHAVAN	**132**	25	27	25	25	15	15	150	132	88.00	120	105	87.50	150	132	88.00	150	132	88.00	90	80	88.89	90	80	88.89
MAHANTESH SHIVANAND DIVATE	**132**	25	27	25	25	15	15	150	132	88.00	120	105	87.50	150	132	88.00	150	132	88.00	90	80	88.89	90	80	88.89
AKSHAY VIJAY GHADAGE	**130**	25	25	25	25	15	15	150	130	86.67	120	105	87.50	150	130	86.67	150	130	86.67	90	80	88.89	90	80	88.89
ABHISHEK TANAJI GHADAGE	**130**	25	25	25	25	15	15	150	130	86.67	120	105	87.50	150	130	86.67	150	130	86.67	90	80	88.89	90	80	88.89

VIKRAM NANASAHEB JAGTAP	**134**	25	27	27	25	15	15	150	134	89.33	120	107	89.17	150	134	89.33	150	134	89.33	90	82	91.11	90	82	91.11
RUSHIKESH RAJKUMAR JETHE	**125**	25	25	23	25	13	14	150	125	83.33	120	100	83.33	150	125	83.33	150	125	83.33	90	75	83.33	90	75	83.33
SUNNY SHIRISH KACHARE	**140**	28	28	30	28	13	13	150	140	93.33	120	112	93.33	150	140	93.33	150	140	93.33	90	84	93.33	90	84	93.33
VISHAL SURYAKANT KADAM	**134**	25	27	27	25	15	15	150	134	89.33	120	107	89.17	150	134	89.33	150	134	89.33	90	82	91.11	90	82	91.11
GANESH SUDHIR KADLASKAR	**136**	25	27	27	27	15	15	150	136	90.67	120	109	90.83	150	136	90.67	150	136	90.67	90	84	93.33	90	84	93.33
VIVEK VILAS KALE	**138**	28	26	30	28	13	13	150	138	92.00	120	112	93.33	150	138	92.00	150	138	92.00	90	84	93.33	90	84	93.33
ROHIT SUBHASH KALE	**120**	22	23	23	25	13	14	150	120	80.00	120	97	80.83	150	120	80.00	150	120	80.00	90	75	83.33	90	75	83.33
RAVI ANIL MASTUD	**142**	30	28	30	28	13	13	150	142	94.67	120	114	95.00	150	142	94.67	150	142	94.67	90	84	93.33	90	84	93.33
VISHAL BALASO MORE	**135**	25	27	27	26	15	15	150	135	90.00	120	108	90.00	150	135	90.00	150	135	90.00	90	83	92.22	90	83	92.22
OM ANNASO PATIL	**132**	25	27	25	25	15	15	150	132	88.00	120	105	87.50	150	132	88.00	150	132	88.00	90	80	88.89	90	80	88.89
SURAJ ANNASO PHATE	**142**	30	28	30	28	13	13	150	142	94.67	120	114	95.00	150	142	94.67	150	142	94.67	90	84	93.33	90	84	93.33
PRAJWAL GAJANAN PUJARI	**125**	25	25	23	25	13	14	150	125	83.33	120	100	83.33	150	125	83.33	150	125	83.33	90	75	83.33	90	75	83.33
ATHARV SANJAY ROPALKAR	**141**	29	28	30	28	13	13	150	141	94.00	120	113	94.17	150	141	94.00	150	141	94.00	90	84	93.33	90	84	93.33
RANJIT DHANANJAY SARAVALE	**128**	25	25	26	25	13	14	150	128	85.33	120	103	85.83	150	128	85.33	150	128	85.33	90	78	86.67	90	78	86.67
ANURAG ANIL SHINDE	**140**	28	28	30	28	13	13	150	140	93.33	120	112	93.33	150	140	93.33	150	140	93.33	90	84	93.33	90	84	93.33
SAMBHAJI SHINDE DEEPAK	**140**	28	28	30	28	13	13	150	140	93.33	120	112	93.33	150	140	93.33	150	140	93.33	90	84	93.33	90	84	93.33
SANKET DATTATRAYA SHINDE	**135**	25	27	27	26	15	15	150	135	90.00	120	108	90.00	150	135	90.00	150	135	90.00	90	83	92.22	90	83	92.22
RUSHIKESH SATYAWAN SURVASE	**138**	28	26	30	28	13	13	150	138	92.00	120	112	93.33	150	138	92.00	150	138	92.00	90	84	93.33	90	84	93.33
PRATHMESH RAJENDRA SURWASE	**126**	25	23	26	25	13	14	150	126	84.00	120	103	85.83	150	126	84.00	150	126	84.00	90	78	86.67	90	78	86.67
ANASAR PIRSO SUTAR	**134**	25	27	27	25	15	15	150	134	89.33	120	107	89.17	150	134	89.33	150	134	89.33	90	82	91.11	90	82	91.11
RUSHIKESH KRUSHNA VYAVAHARE	**139**	28	26	30	28	14	13	150	139	92.67	120	113	94.17	150	139	92.67	150	139	92.67	90	85	94.44	90	85	94.44
GAURAV SOMNATH WAGH	**140**	28	28	30	28	13	13	150	140	93.33	120	112	93.33	150	140	93.33	150	140	93.33	90	84	93.33	90	84	93.33
VISHWAJEET VILAS YADAV	**126**	25	23	26	25	13	14	150	126	84.00	120	103	85.83	150	126	84.00	150	126	84.00	90	78	86.67	90	78	86.67

Number of Students: 52

Tool CO Attainment

Target Level(%): 60

Attainment Level

(Percentage of students scoring Marks >=60) = Level 1

(Percentage of students scoring Marks >=70) = Level 2

(Percentage of students scoring Marks >=80) = Level 3

Linked CO	CE8P.1	CE8P.2	CE8P.3	CE8P.4	CE8P.5	CE8P.6
No. of Students achieving Target Level	52	52	52	52	52	52
No. of Applicable Students	52	52	52	52	52	52
% Students achieving Target Level	100	100	100	100	100	100
Attainment	3	3	3	3	3	3