

Research Project Supervisor:

A person selected by the duly constituted Selection Committee in mathematics and approved by the University, exclusively for P.G. course. OR A person selected by the duly constituted Selection Committee in the relevant subject and approved by the University as a full-time regular teacher at U.G. level with Ph. D. OR a Scientist of government or private research laboratory appointed by university as a contributory teacher and having Ph. D. degree in Mathematics can supervise the research project of the student. The topic for the project work shall be assigned to the student by supervisor at the beginning of the respective semester.

Scheme of Evaluation and Distribution of Marks:

(1) Continuous Internal Evaluation (CIE) in Theory: Total Maximum Marks 20 / (15 for RM)

(A) Unit Tests: Maximum Marks 12 / (10 for RM). Duration of Examination: One Hour.

Pattern of Question Paper: Two offline descriptive Unit Tests each of 12 marks, One Multiple Choice Questions (MCQs) Online/Offline Test of 12 marks, their average be awarded to students.

(B) Overall Participation: Maximum Marks 08 / (05 for RM)

- Attendance in theory classes: 04 / (03 for RM),
- Seminar/Assignment/Power Point Presentation/Paper presentation in Conference/Workshops: 04 / (02 for RM).

Note: A student must have to secure minimum 50% marks in CIE. Failing so, he/she shall not be allowed to appear in Semester End Examination.

(2) Semester End Examination (SEE) in Theory: Maximum Marks 80 / (60 for RM)

Theory Paper: Maximum Marks: 80 / (60 for RM). Duration of Examination: Three Hours / (Two Hours for RM).

- There shall be Four units in each theory paper.
- There shall be total Nine questions in each paper. Out of these Nine, there shall be Eight questions on Four units with alternative choice from the same unit and one compulsory question based on all four units i.e., Solve FIVE questions, choosing ONE from each unit and Question No. 9 is compulsory. Each question will carry 16 marks (12 marks for RM).

**SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.**

Department of Mathematics

Internal Assesment Record-PG-(CIE)-2023-2024

Class	Paper	Teacher Name	Sign
SEM-I	Paper I	Chanchal Jain	<i>Chanchal Jain</i>
	Paper II	Sandhya Chauhan	<i>Sandhya Chauhan</i>
	Paper III	Sandhya Chauhan	<i>Sandhya Chauhan</i>
	Paper IV	Dr. V.T. Chauhan	<i>Dr. V.T. Chauhan</i>
	Paper V	Dr. V.T. Chauhan	<i>Dr. V.T. Chauhan</i>
SEM-II	Paper I	Sandhya Chauhan	<i>Sandhya Chauhan</i>
	Paper II	Sandhya Chauhan	<i>Sandhya Chauhan</i>
	Paper III	Chanchal Jain	<i>Chanchal Jain</i>
	Paper IV	Dr. V.T. Chauhan	<i>Dr. V.T. Chauhan</i>
	Paper V		
SEM-III	Paper I	Chanchal Jain	<i>Chanchal Jain</i>
	Paper II	Chanchal Jain	<i>Chanchal Jain</i>
	Paper III	Sandhya Chauhan	<i>Sandhya Chauhan</i>
	Paper IV	Dr. V.T. Chauhan	<i>Dr. V.T. Chauhan</i>
	Paper V	Dr. V.T. Chauhan	<i>Dr. V.T. Chauhan</i>
SEM-IV	Paper I	Chanchal Jain	<i>Chanchal Jain</i>
	Paper II	Sandhya Chauhan	<i>Sandhya Chauhan</i>
	Paper III	Chanchal Jain	<i>Chanchal Jain</i>
	Paper IV	Dr. V.T. Chauhan	<i>Dr. V.T. Chauhan</i>
	Paper V	Dr. V.T. Chauhan	<i>Dr. V.T. Chauhan</i>



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**HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.**

*HoP
Seal*

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. I Semester -I (2023-24)

Paper -I(Algebra)

Unit test I&II Mark list

Teacher Name: Chanchal Jain

Sr. no.	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	12	5	5	20
2		Harsh P. Kukde	9	4	4	17
3		Himanshu P. Badwaik	12	4	4	20
4		Ku. Khushi R. Yadav	12	4	4	20
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	12	4	4	20
8		Roshan N. khandare	10	4	3	17
9		Sangita R. Chaudhari	12	4	4	20
10		Shradha R. Bhonde	12	4	4	20
11		Vaishanavi D. Barade	12	4	4	20

eJain



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HEAD
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Science College, Congress Nagar,
NAGPUR.

Teach seal Head.




RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

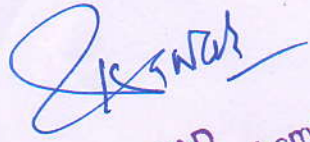
Internal Marks Sheet

Exam Name : FIRST SEMESTER M.Sc.(MATHEMATICS) (NEP)
Subject Name : ALGEBRA
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	395683	20201058504304	DNYANESHWARI KUVARLAL BISEN	20
2	395684	2021016601027516	HARSH PRAMOD KUKDE	17
3	395685	20201010012935	HIMANSHU PRASHANT BADWAIK	20
4	395686	20211010020941	KHUSHI RAJESH YADAV	20
5	395687	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	395688	194010330	POONAM SURESH KULMETHE	20
7	395689	BANGALORE UNIVERSITY	PRERANA WAMANRAO GHARDE	20
8	395690	2020033700005713	ROSHAN NAMDEO KHANDARE	17
9	395691	NU/G/38633	SANGITA RAMESH CHAUDHARI	20
10	395692	20201010012822	SHRADHA RAJESH BHONDE	20
11	395693	20211010021143	VAISHNAVI DIPAK BARADE	20

Print Date & Time: 24-01-2024 02-06-28 PM


Signature of Examiner


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Science college congress nagar, Nagpur
Department of Mathematics
M.Sc I Semester-I (NEP)

Paper-I
Algebra-I
Unit Test-I
Date: 20-Sep-23

Duration: 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) Prove that there are not Simple group of order 63, 56, 36. (08)
- (b) State and prove Sylow's 1st Theorem. (08)

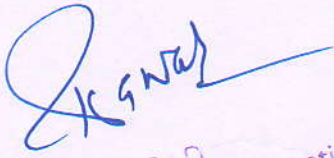
OR

2. (a) State and prove Cauchy's theorem for Abelian group. (08)
- (b) Let G be a group of order pq , Where p and q are prime number such that $p > q$ and q does not divides $(p-1)$. Show that G is cyclic. (8)

Compulsory Questions

3. (a) Show that a sylow p -subgroup of finite group G is unique iff it is a Normal group. (04)

All The Best


H.F. D
Department of Mathematics
Science College, Congress Nagar,
NAGPUR,



Teacher

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I (Sem-I) Session (2023-24)
Subject: Algebra
Assignment**

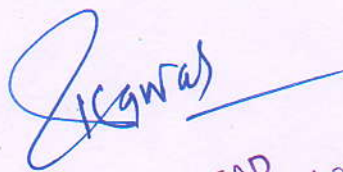
Que1. State and prove 2nd & 3rd Sylow Theorem.

Que 2. If R is unique factorization domain then the factorization of any any element in R as a finite product of irreducible factor is unique to within order and unit factor.


Que 3. If $f(x) \in F[x]$ is irreducible over field $F[x]$ then all roots of $f(x)$ have same multiplicity .

Que4. The finite prime field of a field $F[x]$ is either isomorphic or $\mathbb{Z}/(p)$, where p is prime number

Que5. Let H be a finite subgroup of the group of automorphism of a field E then prove that $[E : E_H] = |H|$



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NAGPUR.


Teacher

Section / Batch: Sem I
 Subject: Algebra
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - I

Month: August - 2023
 Teacher's Name: Chanchal Jain

Attendance Sheet

S.N	Name	Total		Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Progressive Month	
		Upto	Deli/Att																								
1	Ku Dnyaneshwari K Bisen			05/08	P	P	P	P	P	P																	
2	Harsh P. Kukde			05/08	P	P	P	P	P	P																	
3	Ku Himanshu P. Badwaik			05/08	P	P	P	P	P	P																	
4	Ku Khushi R. Yadav			05/08	-	P	-	-	-	-																	
5	Mangesh Shigne			05/08	P	P	P	P	P	P																	
6	Ku Poonam S. Kulmethe			05/08	-	P	-	-	-	-																	
7	Ku Prerana W. Gharde			05/08	-	P	-	-	-	-																	
8	Roshan Namdev.khandare			05/08	P	P	P	P	P	P																	
9	Ku Sangita R. Chaudhari			05/08	P	P	P	P	P	P																	
10	Ku Shradha R. Bhone			05/08	-	P	-	-	-	-																	
11	Ku Vaishnavi D. Barade			05/08	P	P	P	P	P	P																	

Teacher

Chanchal Jain

Head of Department

Principal

HEAD
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Teacher

Section / Batch: Sem I
 Subject: Algebra
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - I

Month: September - 2023
 Teacher's Name: Chanchal Jain

Attendance Sheet

S.N	Name	Total Upto	Period	Date																	Total	Progressive Month				
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			18	19	20	
1	Ku Dnyaneshwari K Bisen		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
2	Harsh P. Kukde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
3	Himanshu P. Badwaik		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
4	Ku Khushi R. Yadav		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
5	Mangesh Shighe		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Ku Poonam S. Kulmethe		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Ku Prerana W. Gharde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	Roshan Namdev khandare		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
9	Ku Sangita R. Chaudhari		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
10	Ku Shradha R. Bhonde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
11	Ku Vaishanavi D. Barade		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		

Chanchal Jain
 Teacher

Chanchal Jain
 Head of Department

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Principal

Section / Batch: Sem I
 Subject : Algebra
 Theory / Practical :

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - I

Month: October - 2023
 Teacher's Name: Chanchal. Jain

Attendance Sheet

S.N	Name	Total		Period																				Total	Progressive Month	
		Upto	Delit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
1	Ku Dnyaneshwari K Bisen			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2	Harsh P. Kukde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Ku Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Mangesh Shigne			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Ku Poonam S. Kulimethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Ku Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Roshan Namdev khandare			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
9	Ku Sangita R. Chaudhari			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
10	Ku Shradha R. Bhonde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
11	Ku Vaishanavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Chanchal Jain
 Teacher

HEAD
 Head of Department
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Principal

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics

M.Sc. I Semester -I (2023-24)

Paper -II(Topology)

Unit test I&II Mark list

Teacher Name: Sandhya Chauhan

Sr. no	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	12	4	4	20
2		Harsh P. Kukde	8	4	4	16
3		Himanshu P. Badwaik	12	4	4	20
4		Ku. Khushi R. Yadav	12	4	4	20
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	12	4	4	20
8		Roshan N. khandare	10	4	4	18
9		Sangita R. Chaudhari	12	4	4	20
10		Shradha R. Bhonde	12	4	4	20
11		Vaishanavi D. Barade	12	4	4	20

Sandhya Chauhan



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Teacher seal Head.

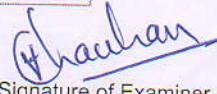


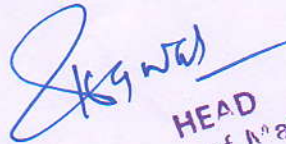
Internal Marks Sheet

Exam Name : FIRST SEMESTER M.Sc.(MATHEMATICS) (NEP)
Subject Name : TOPOLOGY
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	395683	20201058504304	DNYANESHWARI KUVARLAL BISEN	20
2	395684	2021016601027516	HARSH PRAMOD KUKDE	16
3	395685	20201010012935	HIMANSHU PRASHANT BADWAIK	20
4	395686	20211010020941	KHUSHI RAJESH YADAV	20
5	395687	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	395688	194010330	POONAM SURESH KULMETHE	20
7	395689	BANGALORE UNIVERSITY	PRERANA WAMANRAO GHARDE	20
8	395690	2020033700005713	ROSHAN NAMDEO KHANDARE	18
9	395691	NU/G/38633	SANGITA RAMESH CHAUDHARI	20
10	395692	20201010012822	SHRADHA RAJESH BHONDE	20
11	395693	20211010021143	VAISHNAVI DIPAK BARADE	20

Print Date & Time: 24-01-2024 02-08-25 PM


Signature of Examiner


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NAGPUR.

Shri Shivaji Science college congress nagar, Nagpur
Department of Mathematics

Topology

Unit Test-I

Date: sep 21,2023

Duration: 1 hours]

[Max mark: 20 Marks

Unit I

1. (a) Show that the topologies R_k and R_L is not comparable.

(08)

- (b) Prove that the union of any two topologies on a non empty set X need not be a topology on X , but any intersection of topology on X is a topology on X .

(08)

OR

2. (a) Let Y be a subspace of X then prove that a set A is closed in Y iff it equals to the intersection of a closed set of X with Y .

(08)

- (b) State and prove Maps into product theorem,

(08)

Compulsory

3. (a) Define projection map and metric topology

(04)

All The Best

G. Chauhan

[Signature]
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I (Sem-I) Session (2023-24)
Subject: Topology
Assignment**

1. Define separation. Prove that image of connected space under a continuous map is connected.
2. Prove that the Union of collection connected subspace of X that have one point common is connected.
3. Define Path connected space, Prove that path connected space is connected.
4. State and prove Intermediate value theorem.
5. Prove that finite Cartesian product space is connected

Shauhan

Sharma

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

Month: Aug - 2023
 Teacher's Name: Sandhya Chaudhari

Section / Batch : Sem I
 Subject : Topo
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - I
 Attendance Sheet (2023 - 2024)

S.N.	Name	Attendance Sheet (2023 - 2024)																						
		Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
1	Ku Dnyaneshwari K Bisen																							
2	Harsh P. Kukde																							
3	Himanshu P. Badwaik																							
4	Ku Khushi R. Yadav																							
5	Mangesh Shigne																							
6	Ku Poonam S. Kulmethe																							
7	Ku Prerana W. Gharde																							
8	Roshan Namdev khandare																							
9	Ku Sangita R. Chaudhari																							
10	Ku Shradha R. Bhonde																							
11	Ku Vaishanavi D. Barade																							

Sandhya

Teacher

Sandhya

Head of Department

Principal

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Month: Sep-2023
 Teacher's Name: Sandhya Chauhan

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur

Section / Batch : sem I
 Subject : Top
 Theory / Practical

M.Sc. I (Mathematics) Sem - I
 Attendance Sheet (2023-2024) A

S.N.	Name	Attendance Sheet (2023-2024) A																						
		Peri Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
1	Dnyaneshwari K Bisen	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2	Harsh P. Kukde	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Himanshu P. Badwaik	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Khushi R. Yadav	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Mangesh Shighe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	Poonam S. Kulmethe	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Prerana W. Gharde	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Roshan Namdev khandare	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	Sangita R. Chaudhari	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
10	Shradha R. Bhonde	-	P	P	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
11	Vaishnavi D. Barade	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Sandhya Chauhan

Teacher

Sandhya Chauhan

Head of Department

Principal

Section / Batch : Sem I

Subject : Topo Theory / Practical

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

M.Sc. I (Mathematics) Sem - I

Month: Oct - 2023

Teacher's Name: Sandhya Chauhan

Attendance Sheet (2023 - 2024)

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
1	Ku	Dnyaneshwari K Bisen	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2		HarshP. Kukde	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
3		Himanshu P. Badwaik	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Ku	Khushi R. Yadav	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
5		Mangesh Shigne	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Ku	Poonam S. Kulmethe	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Ku	Prerana W. Gharde	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8		Roshan Namdev khandare	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
9	Ku	Sangita R. Chaudhari	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
10	Ku	Shradha R. Bhonde	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
11	Ku	Vaishnavi D. Barade	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Sandhya Chauhan

Teacher

Sandhya Chauhan

Head of Department

HEAD

Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Principal

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics

M.Sc. I Semester -I (2023-24)

Paper -III(Ordinary Differential Equation)

Unit test I&II Mark list

Teacher Name: Sandhya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	12	4	4	20
2		Harsh P. Kukde	10	4	4	18
3		Himanshu P. Badwaik	12	4	4	20
4		Ku. Khushi R. Yadav	12	4	4	20
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	12	4	4	20
8		Roshan N. khandare	10	4	4	18
9		Sangita R. Chaudhari	12	4	4	20
10		Shradha R. Bhonde	12	4	4	20
11		Vaishnavi D. Barade	12	4	4	20

Sandhya Chauhan



Sandhya Chauhan

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teach Head seal



RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

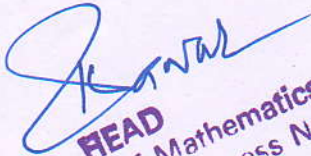
Internal Marks Sheet

Exam Name : FIRST SEMESTER M.Sc.(MATHEMATICS) (NEP)
Subject Name : ORDINARY DIFFERENTIAL EQUATIONS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	395683	20201058504304	DNYANESHWARI KUVARLAL BISEN	20
2	395684	2021016601027516	HARSH PRAMOD KUKDE	18
3	395685	20201010012935	HIMANSHU PRASHANT BADWAIK	20
4	395686	20211010020941	KHUSHI RAJESH YADAV	20
5	395687	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	395688	194010330	POONAM SURESH KULMETHE	20
7	395689	BANGALORE UNIVERSITY	PRERANA WAMANRAO GHARDE	20
8	395690	2020033700005713	ROSHAN NAMDEO KHANDARE	18
9	395691	NU/G/38633	SANGITA RAMESH CHAUDHARI	20
10	395692	20201010012822	SHRADHA RAJESH BHONDE	20
11	395693	20211010021143	VAISHNAVI DIPAK BARADE	20

Print Date & Time: 24-01-2024 02-09-25 PM

Signature of Examiner


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Science college congress nagar, Nagpur

Department of Mathematics

Ordinary Differential Equation

Unit Test-I

Date: 22 sep 2023

Duration: 1 hours AM]

[Max mark: 20 Marks

Unit I

1. (a) Verify that $\Phi_1(x) = x^2$ is a solution of $L(y) = y'' - 2x^{-2}y = 0$ ($0 < x < \infty$) find the general solution of $y'' - 2x^{-2}y = 0$ ($0 < x < \infty$)

(08)

- (b) Find two linearly independent solution of the following equation
 $(3x-1)^2 y'' + (9x-3)y' - 9y = 0$.

(08)

OR

2. (a) Find two linearly independent power series solution in power of x for the equation $y'' - xy' = 0$.

(08)

- (b) Find the solution of $x^2 y'' + 4xy' + (2 + x^2)y = 0$.

(08)

Compulsory

3. (a) Define n th Legendre's polynomial.

(04)

All The Best

Shankar

Shankar

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I (Sem-I) Session (2023-24)
Subject: Ordinary Differential Equation
Assignment**

1. Derive the expression for Bessel's equation for zero order.
2. State and prove Bessel's Equation for Zero order.
3. Show that infinity is not a regular singular point for the Bessel's equation

$$x^2y'' + xy'(x^2 - \alpha^2)y = 0$$

4. Discuss the Method of Successive approximation.
5. State and Prove Existence theorem.

Shauhan

Jugwal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

Month: Aug - 2023
 Teacher's Name: Sandhya Chauhan

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - I
 Attendance Sheet (2023-2024)

Section / Batch : Sem I
 Subject : ODE
 Theory / Practical

S.N.	Name	Attendance Sheet (2023-2024)																						
		Peri Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
1	Ku																							
2	Dnyaneshwari K Bisen																							
3	HarshP. Kukde																							
4	Himanshu P. Badwaik																							
5	Khushi R. Yadav																							
6	Mangesh Shigne																							
7	Poonam S. Kulmethe																							
8	Prerana W. Gharde																							
9	Roshan Namdev khandare																							
10	Sangita R. Chaudhari																							
11	Shradha R. Bhonde																							
	Vaishanavi D. Barade																							

Sandhya Chauhan
 Teacher

Dr. Kalpana N. Pawar
 Head of Department
 Prof & Head Department of Mathematics
 Shivaji Science College, Nagpur

Principal

Section / Batch :
 Subject : ODE
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur

M.Sc. I (Mathematics) Sem - I

Attendance Sheet (2023-2024)

Month: Sep - 2023

Teacher's Name: Sandhya Chauhan

ODE
 VI-I
 10/10
 10/10

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Del	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
1	Ku		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2																							
3																							
4	Ku		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5																							
6	Ku		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Ku																						
8																							
9	Ku		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
10	Ku																						
11	Ku		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Sandhya Chauhan

Teacher

Sandhya Chauhan

Head of Department

HEAD

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR,

Principal

Section / Batch : Sem I
 Subject : ODE
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - I

Month: Oct - 2023
 Teacher's Name: Sandhya Chauhan

Attendance Sheet (2023-2024)

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Date	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	10/10	11/10	12/10	13/10	14/10	15/10	16/10	17/10	18/10	19/10	20/10	
1	Ku Dnyaneshwari K Bisen		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
2	Harsh P. Kukde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
3	Himanshu P. Badwaik		A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
4	Ku Khushi R. Yadav		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
5	Mangesh Shigne		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
6	Ku Poonam S. Kulmethe		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
7	Ku Prerana W. Gharde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
8	Roshan Namdev khandare		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
9	Ku Sangita R. Chaudhari		A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
10	Ku Shradha R. Bhonde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-
11	Ku Vaishanavi D. Barade		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-

Sandhya Chauhan

Teacher

Sandhya Chauhan

Principal

Head of Department
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

**SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.**

Department of Mathematics

M.Sc. I Semester -I (2023-24)

Paper -IV(Integral Equation)

Unit test I&II Mark list

Teacher Name: Dr. V.T. Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	12	4	4	20
2		Harsh P. Kukde	10	3	4	17
3		Himanshu P. Badwaik	12	4	4	20
4		Ku. Khushi R. Yadav	12	4	4	20
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	12	4	4	20
8		Roshan N. khandare	12	4	4	20
9		Sangita R. Chaudhari	12	4	4	20
10		Shradha R. Bhonde	12	4	4	20
11		Vaishnavi D. Barade	12	4	4	20

V.T. Chauhan



R. K. Rawal

**HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.**

V.T.

*Head
seal
Teacher*



Internal Marks Sheet

Exam Name : FIRST SEMESTER M.Sc.(MATHEMATICS) (NEP)


Subject Name : INTEGRAL EQUATIONS


College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE

Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	395683	20201058504304	DNYANESHWARI KUVARLAL BISEN	20
2	395684	2021016601027516	HARSH PRAMOD KUKDE	17
3	395685	20201010012935	HIMANSHU PRASHANT BADWAIK	20
4	395686	20211010020941	KHUSHI RAJESH YADAV	20
5	395687	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	395688	194010330	POONAM SURESH KULMETHE	20
7	395689	BANGALORE UNIVERSITY	PRERANA WAMANRAO GHARDE	20
8	395690	2020033700005713	ROSHAN NAMDEO KHANDARE	20
9	395691	NU/G/38633	SANGITA RAMESH CHAUDHARI	20
10	395692	20201010012822	SHRADHA RAJESH BHONDE	20
11	395693	20211010021143	VAISHNAVI DIPAK BARADE	20

Print Date & Time: 24-01-2024 02:14:41 PM


Signature of Examiner


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Education Society Amravati's
Science College Congress Nagar, Nagpur
Department of Mathematics
M.Sc I Semester-I (NEP)
Paper- Integral Equation
Unit Test-I
Date: 23rd Sept. 2023

Duration: 1 Hour]

[Max mark: 20 Marks

Attempt Any ONE questions

UNIT-I

1. (a) Show that $u(x) = \cos 2x$ is a solution of the integral equation

$$u(x) = \cos x + 3 \int_0^{\frac{\pi}{2}} K(x, t) u(t) dt,$$

$$\begin{aligned} \text{where } k(x, t) &= \sin x \cos t, 0 \leq x \leq t \\ &= \cos x \sin t, t \leq x \leq \pi \end{aligned}$$

08

- (b) Turn the following differential equation into an integral equation

$$y'' - \lambda y = \cos x$$

$$y = 0 \text{ at } x = 0, y' = 0 \text{ at } x = 1$$

08

2. (a) Find the eigen values and eigen vectors of the system defined as

$$\phi(x) = \int_0^1 (1+xt) \phi(t) dt, 0 \leq x \leq 1$$

08

- (b) Solve the integro-differential equation

$$y'(x) + e^x \int_0^1 e^{-t} y(t) dt = 1, \text{ where } y(0) = 0.$$

08

3. (a) Discuss the Kellogg's iterative Process

Shauhan

Shauhan
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

VT

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I (Sem-I) Session (2023-24)
Subject: Integral Equation
Assignment**

Que.1. Write the Classification of Integral Equation.

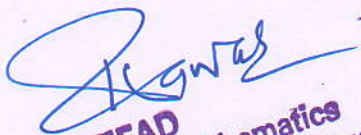
Que.2. Discuss Sturm-Liouville's types theorem.

Que.3. Discuss the Kellog's iterative process.

Que.4. Discuss Abel's equation. $\int_0^x (x-y)^{-\alpha} \phi(y) dy = f(x)$

Que.5. Find the solution of Fredholm integral equation of First kind whose Kernel is Green's function type.

V.T.
Chauhan


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

Batch: Sem I
 Subject: Integral equation
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - I

Month: Aug - 2023
 Teacher's Name: Dr. Vidhy T. Chauhan

Attendance Sheet
(2023-2024)

S.N	Name	Total		Period	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Progressive Month	
		Upto	Deli/Att																									
1	Ku Dnyaneshwari K Bisen				8/2/23	P	A	P	P	P	P																	
2	Ku Harsh P. Kukde				8/2/23	A	P	P	P	P	P																	
3	Ku Himanshu P. Badwaik				8/2/23	A	A	P	P	P	P																	
4	Ku Khushi R. Yadav				8/2/23	A	P	P	P	P	P																	
5	Ku Mangesh Shighe				8/2/23	A	P	P	P	P	P																	
6	Ku Poonam S. Kulmethe				8/2/23	P	P	P	P	P	P																	
7	Ku Prerana W. Gharde				8/2/23	A	P	A	P	P	P																	
8	Ku Roshan Namdev Khandare				8/2/23	P	A	P	P	P	P																	
9	Ku Sangita R. Chaudhari				8/2/23	P	A	P	P	P	P																	
10	Ku Shradha R. Bhonde				8/2/23	P	P	A	P	P	P																	
11	Ku Vaishnavi D. Barade				8/2/23	P	P	P	P	P	P																	

Chauhan

Teacher

Dr. Vidhy T. Chauhan

Head of Department
 Dr. Kaipaha N. Pawar
 Prof & Head Department of Mathematics
 Shivaji Science College, Nagpur

Batch: Sem I

Subject: Integral Equations
Theory / Practical:

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
M.Sc. I (Mathematics) Sem - I

Month: Sep - 2023

Teacher's Name: Dr. Vidhya T. Chauhan

Attendance Sheet
(2023-24)

S.N	Name	Total		Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Progressive Month	
		Upto	Deli/Att																								
1	Ku Dnyaneshwari K Bisen			01/09	A	P	A	P	A	P	A	P	P	P	A	P	P	P	P								
2	Harsh P. Kukde			02/09	A	P	A	P	A	P	A	P	P	P	A	P	P	P	P								
3	Himanshu P. Badwaik			03/09	P	P	A	P	P	P	A	P	P	P	P	P	P	P	P								
4	Khushi R. Yadav			04/09	P	A	A	P	P	P	P	A	P	P	P	P	P	P	P								
5	Mangesh Shighe			05/09	P	P	A	P	A	P	P	P	P	P	P	P	P	P	P								
6	Poonam S. Kulimethe			06/09	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
7	Prerana W. Gharde			07/09	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
8	Roshan Namdev khandare			08/09	A	P	P	A	P	A	P	A	P	A	P	A	P	A	P								
9	Sangita R. Chaudhari			09/09	P	A	A	P	P	A	P	A	P	A	P	A	P	A	P								
10	Shradha R. Bhonde			10/09	A	A	P	P	P	A	P	A	P	P	P	P	P	P	P								
11	Vaishnavi D. Barade			11/09	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								

Chauhan

Teacher

Signature

Head of Department
Prof & Head Department of Mathematics
Shivaji Science College, Nagpur

Batch: Sem I

Subject: Integral Equations
Theory / Practical:

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
M.Sc. I (Mathematics) Sem - I

Month: Oct. 2023

Teacher's Name: Dr. Vidhyg T. Chauhan

Attendance Sheet

(2023 - 24)

S.N	Name	Total Upto	Period	Date																				Total	Progressive Month
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
1	Ku Dnyaneshwari K Bisen			02/10	04/10	05/10	06/10	07/10	08/10	09/10	11/10	12/10	13/10	14/10	15/10	16/10	17/10	18/10	19/10	20/10					
2	Harsh P. Kukde			P	P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
3	Ku Himanshu P. Badwaik			A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
5	Mangesh Shighe			P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
6	Ku Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
7	Ku Prerana W. Gharde			P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
8	Roshan Namdev khandare			P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
9	Ku Sangita R. Chaudhari			A	P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
10	Ku Shradha R. Bhone			A	P	P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P				
11	Ku Vaishanavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				

Chauhan

Teacher

Dr. Vidhyg T. Chauhan

Head of Department

Prof & Head Department of Mathematics

Shivaji Science College, Nagpur

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. I Semester -I (2023-24)
Paper -IV(Research Methodology)

Unit test I&II Mark list

Teacher Name: Dr. V.T. Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (02)	Attendance (03)	Total (15)
1		Dnyaneshwari K Bisen	10	2	3	15
2		Harsh P. Kukde	10	2	3	15
3		Himanshu P. Badwaik	10	2	3	15
4		Ku. Khushi R. Yadav	10	2	3	15
5		Mangesh Shingane	10	2	3	15
6		Poonam S. Kulmethe	10	2	3	15
7		Prerana W. Gharde	10	2	3	15
8		Roshan N. khandare	10	2	3	15
9		Sangita R. Chaudhari	10	2	3	15
10		Shradha R. Bhonde	10	2	3	15
11		Vaishanavi D. Barade	10	2	3	15

Chauhan

VT HOD



Rajwal
HEAD
Department of Mathematics
Science College, Congress Nagar
NAGPUR.

Head
Seal
Teacher

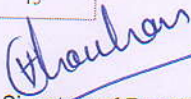


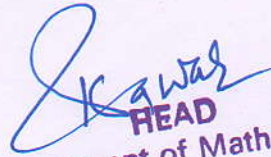
Internal Marks Sheet

Exam Name : FIRST SEMESTER M.Sc.(MATHEMATICS) (NEP)
Subject Name : RESEARCH METHODOLOGY IN MATHEMATICS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 15
1	395683	20201058504304	DNYANESHWARI KUVARLAL BISEN	15
2	395684	2021016601027516	HARSH PRAMOD KUKDE	15
3	395685	20201010012935	HIMANSHU PRASHANT BADWAIK	15
4	395686	20211010020941	KHUSHI RAJESH YADAV	15
5	395687	2014016601098481	MANGESH VITTHALRAO SHINGANE	15
6	395688	194010330	POONAM SURESH KULMETHE	15
7	395689	BANGALORE UNIVERSITY	PRERANA WAMANRAO GHARDE	15
8	395690	2020033700005713	ROSHAN NAMDEO KHANDARE	15
9	395691	NU/G/38633	SANGITA RAMESH CHAUDHARI	15
10	395692	20201010012822	SHRADHA RAJESH BHONDE	15
11	395693	20211010021143	VAISHNAVI DIPAK BARADE	15

Print Date & Time: 24-01-2024 02:15:35 PM


Signature of Examiner


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Education Society Amravati's
Science College Congress Nagar, Nagpur
Department of Mathematics
M.Sc I Semester-I (NEP)
Paper-V Research Methodology
Unit Test-I

Date: 25th Sept . 2023

Duration: 1 Hour]

[Max mark: 15 Marks

Attempt Any ONE questions

1. (a) Outline the main objective of research and provide detailed explanation for each objective 06
- (b) What is research Problem ? Discuss the relation between research problem and choice of research design. 06

OR

2. (a) What is research process ? Explain in brief the different steps involve in the Research Process. 06
- (b) What are the problem usually faced researchers in India ? Explain 06

Compulsory

3. (a) Write a short note one 'Review of Literature' in research 03

Chauhan

Sharma

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

VT

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I (Sem-I) Session (2023-24)
Subject: Research Methodology
Assignment**

Que.1. Write a short note on Problem and Project base learning.

Que.2. List and explain in short, the content of the general structure of the project report.


Que.3. Explain the various Process involved in the research project work process.

Que. 4. What is Patent explain in detail.

Que.5. Described the various role of the group member for the best performance in the group process learning.

VT

Chauhan


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

Month: August to October (2023)
 Teacher's Name: Dr. Vidhy T. Chauhan

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - II

Batch: Sem I
 Subject: R.M.
 Theory / Practical:

Attendance Sheet
 (2023-24)

S.N	Name	Total Upto	Period	Date																	Total	Progressive Month																	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			18	19	20														
				20/08	21/08	22/08	23/08	24/08	25/08	26/08	27/08	28/08	29/08	30/08	31/08	01/09	02/09	03/09	04/09	05/09	06/09	07/09	08/09	09/09	10/09	11/09	12/09	13/09	14/09	15/09	16/09	17/09	18/09	19/09	20/09				
1	Dnyaneshwari K Bisen			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
2	Harsh P. Kukde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
3	Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
4	Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
5	Mangesh Shighe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	Roshan Namdev Khandare			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
9	Sangita R. Chaudhari			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
10	Shradha R. Bhonde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
11	Vaishnavi D. Barade	Pf		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		

(Signature)
 Teacher

(Signature)
 Head of Department

Dr. Kalpana N. Pawar
 Prof & Head Department of Mathematics
 Shivaji Science College, Nagpur

Principal

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. I Semester -II (2023-24)

Paper -I (Real Analysis)

Unit test I&II Mark list

Teacher Name: Sandya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	8	4	4	16
2		Harsh P. Kukde	9	4	3	16
3		Himanshu P. Badwaik	10	4	4	18
4		Ku. Khushi R. Yadav	11	4	4	19
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	11	4	4	19
8		Roshan N. khandare	10	4	3	17
9		Sangita R. Chaudhari	11	4	4	19
10		Shradha R. Bhonde	10	4	4	18
11		Vaishanavi D. Barade	12	4	4	20

S. Chauhan



J. G. Was

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Head
Seal
Teacher



RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

Internal Marks Sheet

Exam Name : SECOND SEMESTER M.Sc.(MATHEMATICS) (NEP)

Subject Name : REAL ANALYSIS

College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE

Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	401345	20201058504304	DNYANESHWARI KUVARLAL BISEN	16
2	401346	2021016601027516	HARSH PRAMOD KUKDE	16
3	401347	20201010012935	HIMANSHU PRASHANT BADWAIK	18
4	401348	20211010020941	KHUSHI RAJESH YADAV	19
5	401349	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	401350	194010330	POONAM SURESH KULMETHE	20
7	401351	-	PRERANA WAMANRAO GHARDE	19
8	401352	2020033700005713	ROSHAN NAMDEO KHANDARE	17
9	401353	NU/G/38633	SANGITA RAMESH CHAUDHARI	19
10	401354	20201010012822	SHRADHA RAJESH BHONDE	18
11	401355	20211010021143	VAISHNAVI DIPAK BARADE	20

Chauhan

Signature of Examiner

Print Date & Time: 18-09-2024 03:56:29 PM

Shrinwas
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Head seal + each

Shri Shivaji Education Society Amravati's
Science College Congress Nagar, Nagpur
Department of Mathematics
M.Sc I Semester-II (NEP)
Paper-I Real Analysis
Unit Test-I
Date: 24th Feb. 2024

Duration: 1 Hour]

[Max mark: 20 Marks

Attempt Any ONE questions

1. (a) Define uniform Convergence of function . prove that the sequence f_n of
Function define on a set E co0 there exist + ve int N
s.t . $n, m \geq \Rightarrow |f_m(x) - f_n(x)| \leq \epsilon$ (08)
- (b) state and proved uniform convergence and continuity theorem. (08)

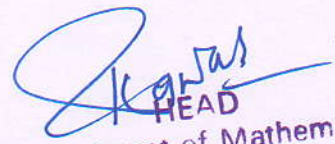
OR

2. (a) state and proved reimann stielge integration theorem . (08)
- (b) state and proved uniform convergence and differentiation theorem . (08)

Compulsory

3. (a) Define Equicontinuous and algebra of set. (04)

C. Shambhar


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I(Sem-II)Session (2023-24)
Subject: Real Analysis
Assignment**

Que.1. Prove that a topological Manifold M is locally connected, locally compact and union of countable collection of compact subset:


Que.2. State and prove Inverse Function theorem.

Que.3. State and prove Implicit Function theorem.

Que.4. State and prove Rank theorem

Que.5. Define continuously differential Function and partial derivative.

Shauhan


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

Section / Batch: Sem II

Subject: **REAL**
Theory / Practical:

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

M.Sc. I (Mathematics) Sem - II

Attendance Sheet (2023-2024)

Month: Feb - 2024

Teacher's Name: Sandhya Chauhan

S.N	Name	Total Upto	Delj Att	Date																	Total	Progressive Month					
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			18	19	20		
1	Ku Dnyaneshwari K Bisen			6/2	7/2	8/2	9/2	10/2	11/2	12/2	13/2	14/2	15/2	16/2	17/2	18/2	19/2	20/2	21/2	22/2	23/2	24/2	25/2	26/2	27/2		
2	Ku Harsh P. Kukde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
3	Ku Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
4	Ku Khushi R. Yadav			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
5	Ku Mangesh Shighe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Ku Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Ku Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	Ku Roshan Namdev khandare			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
9	Ku Sangita R. Chaudhari			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
10	Ku Shradha R. Bhonde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
11	Ku Vaishanavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		

Sandhya Chauhan

Teacher

Sandhya Chauhan

Head of Department

Principal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem II
 Subject: **REAL**
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - II

Month: **March-2024**
 Teacher's Name: **Sandhya Chaudhan**

Attendance Sheet (2023-2024)

S.N	Name	Total		Date											Total	Progressive Month									
		Upto	Del/Att	1	2	3	4	5	6	7	8	9	10	11			12	13	14	15	16	17	18	19	20
1	Ku Dnyaneshwari K Bisen			1/3	2/3	3/3	5/3	6/3	7/3	8/3	9/3	10/3	11/3	12/3	13/3	14/3	15/3								
2	Ku Harsh P. Kukde			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
3	Ku Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
5	Ku Mangesh Shigne			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
6	Ku Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
7	Ku Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
8	Ku Roshan Namdev Khandare			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
9	Ku Sangita R. Chaudhari			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
10	Ku Shradha R. Bhonde			P	P	P	P	P	P	P	P	P	P	P	P	P	P								
11	Ku Vaishnavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P								

(S Chaudhan)
 Teacher

(S Chaudhan)
 HEAD

Department of Mathematics
 Science College, Congress Nagar
 NAGPUR.

Principal

Section / Batch: Sem II
 Subject: **REAL (NEP)**
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - II

Month: **April-2024**
 Teacher's Name: **Sandhya Chauhan**

Attendance Sheet

S.N	Name	Total																			Total	Progressive Month					
		Upto	Delij/Att	Pe	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			17	18	19	20	rent Mo
1	Ku Dnyaneshwari K Bisen			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
2	Harsh P. Kukde			01/04	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
3	Ku Himanshu P. Badwaik			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
4	Ku Khushi R. Yadav			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
5	Mangesh Shigne			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Ku Poonam S. Kulmethe			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Ku Prerana W. Gharde			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	Roshan Namdev khandare			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
9	Ku Sangita R. Chaudhari			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
10	Ku Shradha R. Bhonde			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
11	Ku Vaishanavi D. Barade			01/04	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		

Sandhya Chauhan
 Teacher

Sandhya Chauhan
 Head of Department
HEAD

Principal

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. I Semester -II(2023-24)
Paper -II(Differential Geometry)
Unit test I&II Mark list
Teacher Name: Sandya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	10	4	3	17
2		Harsh P. Kukde	10	3	3	16
3		Himanshu P. Badwaik	11	4	4	19
4		Ku. Khushi R. Yadav	11	4	4	19
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	11	4	4	19
8		Roshan N. khandare	10	4	3	17
9		Sangita R. Chaudhari	11	4	4	19
10		Shradha R. Bhonde	11	4	4	19
11		Vaishanavi D. Barade	12	4	4	20

Sandya Chauhan



Sandya Chauhan
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

seal
Head
Teacher



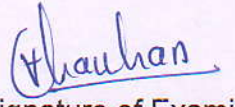
RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR


Internal Marks Sheet

Exam Name : SECOND SEMESTER M.Sc.(MATHEMATICS) (NEP)
Subject Name : DIFFERENTIAL GEOMETRY
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	401345	20201058504304	DNYANESHWARI KUVARLAL BISEN	17
2	401346	2021016601027516	HARSH PRAMOD KUKDE	16
3	401347	20201010012935	HIMANSHU PRASHANT BADWAIK	19
4	401348	20211010020941	KHUSHI RAJESH YADAV	19
5	401349	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	401350	194010330	POONAM SURESH KULMETHE	20
7	401351	-	PRERANA WAMANRAO GHARDE	19
8	401352	2020033700005713	ROSHAN NAMDEO KHANDARE	17
9	401353	NU/G/38633	SANGITA RAMESH CHAUDHARI	19
10	401354	20201010012822	SHRADHA RAJESH BHONDE	19
11	401355	20211010021143	VAISHNAVI DIPAK BARADE	20

Print Date & Time: 18-09-2024 03:58-15 PM


Signature of Examiner


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Education Society Amravati's
Science College Congress Nagar, Nagpur
Department of Mathematics
M.Sc I Semester-II (NEP)
Paper -II Differential Geometry
Unit Test-I

Date: 26th feb 2024

Duration: 1 Hour]

[Max mark: 20 Marks

Attempt Any ONE questions

1. (a) Show that the position vector of any point on the surface of revolution generated by the curve $x = g(u)$, $y = 0$, $z = f(u)$ in XOY plane is $r = (g(u)\cos v, g(u)\sin v, f(u))$, where v is the angle of rotation. (08)
- (b) Calculate the first fundamental coefficient and the area of anchor ring corresponding to the domain $0 \leq u \leq 2\pi$ and $0 \leq v \leq 2\pi$ (08)

OR

2. (a) Find the coefficient of the direction makes an angle $\pi/2$ with direction whose coefficient are (l, m) . (08)

- (b) Derive the differential equation of geodesic. (08)

Compulsory

- (a) Show that proper parametric transformation either leaves every normal unchanged or reversed the direction of the normal (04)

Chauhan

Segwal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I(Sem-II)Session (2023-24)
Subject: Differential Geometry
Assignment**

Que.1. State and prove Gauss-Bonnet theorem .

Que.2. Prove that at every point of a geodesic, the rectifying plane is tangent plane to the surface.

Que.3. Show that a Characteristic property of geodesic is that at every point its principal normal is normal to the surface. Show also every curve having this property is geodesic.

Que.4. Prove that if there is a surface of minimum area passing through a closed space curve , then it is necessarily a minimal surface.

Que.5. Find the curvature of a geodesic triangle ABC enclosing a region R on the surface .

Shankar

Shankar
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem II

Subject : DV1

Theory / Practical :

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

M.Sc. I (Mathematics) Sem - II

Attendance Sheet (2023-2024)

Month: ~~Jan~~ Feb-2024

Teacher's Name: Sandhya Chauhan

S.N	Name	Total Upto	Delj Att	Pe Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Progressive Month
					6/2	7/2	8/2	9/2	10/2	11/2	12/2	13/2	14/2	15/2	16/2	17/2	18/2	19/2	20/2	21/2	22/2	23/2	24/2	25/2	26/2	
1	Ku Dnyaneshwari K Bisen				P	P	P	P	P	P	P	P	A	A	P	P	P	P	P	A	A					
2	Harsh P. Kukde				P	P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	A	A				
3	Ku Himanshu P. Badwaik				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
4	Ku Khushi R. Yadav				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
5	Mangesh Shighe				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
6	Ku Poonam S. Kulmethe				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
7	Ku Prerana W. Gharde				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
8	Roshan Namdev khandare				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
9	Ku Sangita R. Chaudhari				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
10	Ku Shradha R. Bhonde				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
11	Ku Vaishnavi D. Barade				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				

Sandhya Chauhan

Teacher

Sandhya Chauhan

Head of Department

Principal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem II

Subject : D.G.
Theory / Practical :

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
M.Sc. I (Mathematics) Sem - II

Attendance Sheet (2023-2024)

Month: March-2024
Teacher's Name: Sandhya Chauhan

S.N	Name	Total Upto	Per date	Date																	Total	Progressive Month				
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			18	19	20	
1	Ku Dnyaneshwari K Bisen		01/3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
2	Harsh P. Kukde			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
3	Ku Himanshu P. Badwaik			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
5	Mangesh Shighe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Ku Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Ku Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	Roshan Namdev khandare			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
9	Ku Sangita R. Chaudhari			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
10	Ku Shradha R. Bhonde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
11	Ku Vaishanavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		

Sandhya Chauhan

Teacher

Sandhya Chauhan

Head of Department

HEAD

Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Principal

Section / Batch: Sem II
 Subject : O.G.T.
 Theory / Practical :

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - II
 Attendance Sheet

Month: April - 2024
 Teacher's Name: Sandhya Chauhan

S.N	Name	Total Upto	Date	Date																	Total	Progressive Month			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			18	19	20
1	Ku Dnyaneshwari K Bisen			1/4	2/4	3/4	4/4	5/4	6/4	8/4	10/4	12/4	13/4	14/4	15/4	16/4									
2	Ku HarshP. Kukde			P	P	P	P	P	P	P	P	P	P	P	P	P									
3	Ku Himanshu P. Badwaik			A	P	P	P	A	P	P	P	P	P	P	P	P									
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P									
5	Ku Mangesh Shigne			A	P	P	P	P	P	P	P	P	P	P	P	P									
6	Ku Poonam S. Kulimethe			P	P	P	P	P	P	P	P	P	P	P	P	P									
7	Ku Prerana W. Gharde			A	P.O	P	P	P	P	P	P	P	P	P	P	P									
8	Ku Roshan Namdev khandare			P	P	P	P	P	P	P	P	P	P	P	P	P									
9	Ku Sangita R. Chaudhari			A	P	P	P	P	P	P	P	P	P	P	P	P									
10	Ku Shradha R. Bhone			P	P	P	P	P	P	P	P	P	P	P	P	P									
11	Ku Vaishanavi D. Barade			A	P	P	P	P	P	P	P	P	P	P	P	P									

Sandhya Chauhan
 Teacher

[Signature]
 Head of Department

Principal

Department of Mathematics
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 NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics

M.Sc. I Semester -II (2023-24)

Paper -III(Advanced Numerical Method)

Unit test I&II Mark list

Teacher Name: Chanchal Jain

Sr. no.	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	10	4	4	18
2		Harsh P. Kukde	10	4	3	17
3		Himanshu P. Badwaik	11	4	4	19
4		Ku. Khushi R. Yadav	11	4	4	19
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	11	4	4	19
8		Roshan N. khandare	10	4	3	17
9		Sangita R. Chaudhari	11	4	4	19
10		Shradha R. Bhonde	11	4	4	19
11		Vaishnavi D. Barade	12	4	4	20

Chanchal Jain



Chanchal Jain

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

*Head
seal
Teacher*

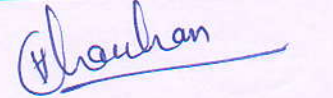


RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR


Internal Marks Sheet

Exam Name : SECOND SEMESTER M.Sc.(MATHEMATICS) (NEP)
Subject Name : ADVANCE NUMERICAL METHODS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	401345	20201058504304	DNYANESHWARI KUVARLAL BISEN	18
2	401346	2021016601027516	HARSH PRAMOD KUKDE	17
3	401347	20201010012935	HIMANSHU PRASHANT BADWAIK	19
4	401348	20211010020941	KHUSHI RAJESH YADAV	19
5	401349	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	401350	194010330	POONAM SURESH KULMETHE	20
7	401351	-	PRERANA WAMANRAO GHARDE	19
8	401352	2020033700005713	ROSHAN NAMDEO KHANDARE	17
9	401353	NU/G/38633	SANGITA RAMESH CHAUDHARI	19
10	401354	20201010012822	SHRADHA RAJESH BHONDE	19
11	401355	20211010021143	VAISHNAVI DIPAK BARADE	20


Signature of Examiner

Print Date & Time: 18-09-2024 03-59-10 PM


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Department of Mathematics
Science College, Congress Nagar,
NAGPUR,

X

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Mathematics
M.Sc-II Semester-II(NEP)
Advance Numerical Method

Unit Test - I
Date: 27th Feb. 2024

Duration: 1 Hour]

[Max mark: 20 Marks

Attempt Any ONE questions

1. (a) Discuss Newton's method of root finding. Show that it has a quadratic order of convergence. (08)
- (b) Derive Newton's Formula to find repeated root of an equation $f(x)=0$. (08)

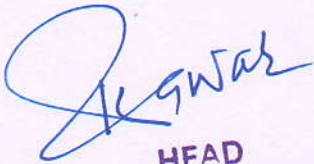
OR

2. (a) Show that the equation $f(x) = 0$ with
 $f(x) = x^4 - 5.4x^3 + 10.56x^2 - 8.954x + 2.7951$ has a triple root near 1 and hence find the triple root by Newton's method. (08)
- (b) Discuss Secant Method for Root finding and its Error Formula. (08)

Compulsory Questions

3. (a) Obtain the real roots of the following iteration by Secant Method
 $x^6 - x - 1 = 0$ (08)

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**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I(Sem-II)Session (2023-24)
Subject: Advanced Numerical Method
Assignment**

Que.1. Derived Gauss central difference formula.

Que.2. Obtained Lagrange's Interpolation formula.

Que.3. Find third order Hermite polynomial passing through the points (x_i, y_i, y_i')

Where $i= 0,1,2,3,\dots$

Que.4. Obtained Newton's general interpolation formula.

Que.5. Find the cubic polynomial which takes the following values $y(5)=336$ and $y(6)=720$, Obtained the value of $y(8)$.

efain

K. Natar
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Teacher

Section / Batch: Sem II
 Subject: ANM
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - II

Month: April
 Teacher's Name: Chanchal Jain

Attendance Sheet (2023-2024)

S.N	Name	Total		Date																				Total	Progressive Month
		Upto	Perf	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
1	Ku Dnyaneshwari K Bisen		01/4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2	Harsh P. Kukde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Ku Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Mangesh Shighe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Ku Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Ku Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Roshan Namdev khandare			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
9	Ku Sangita R. Chaudhari			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
10	Ku Shradha R. Bhonde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
11	Ku Vaishanavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	


 Teacher


 Head of Department

Principal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem II
 Subject: ANM
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem -II

Month: March
 Teacher's Name: Chanchal San

Attendance Sheet (2023 - 2024)

S.N	Name	Total		Date																			Total	Progressive Month			
		Per	At	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20		
1	Ku Dnyaneshwari K Bisen			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Harsh P. Kukde			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Ku Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Mangesh Shigne			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Ku Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	Ku Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Roshan Namdev khandare			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Ku Sangita R. Chaudhari			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Ku Shradha R. Bhonde			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Ku Vaishnavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P


 Teacher



Head of Department
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Principal

Section / Batch: Sem II
 Subject: ANM
 Theory / Practical :

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem -II

Month: Feb
 Teacher's Name: Chanchal Jain

Attendance Sheet (2023-2024)

S.N	Name	Total		Date																	Total	Progressive Month			
		I	Pe	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			18	19	20
1	Ku Dnyaneshwari K Bisen			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
2	Harsh P. Kukde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
3	Ku Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
4	Ku Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
5	Mangesh Shigne			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
6	Ku Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
7	Ku Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
8	Roshan Namdev khandare			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
9	Ku Sangita R. Chaudhari			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
10	Ku Shradha R. Bhonde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
11	Ku Vaishnavi D. Barade			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						

Chanchal Jain

Teacher

Principal

Head of Department
 Department of Mathematics
 Science College, Congress Nagar
 NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. I Semester -II (2023-24)
Paper -IV(Classical Mechanics)

Unit test I&II Mark list

Teacher Name: Dr. Vidya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (12)	Assignment (04)	Attendance (04)	Total (20)
1		Dnyaneshwari K Bisen	10	4	4	18
2		Harsh P. Kukde	10	3	4	17
3		Himanshu P. Badwaik	11	4	4	19
4		Ku. Khushi R. Yadav	12	4	4	20
5		Mangesh Shingane	12	4	4	20
6		Poonam S. Kulmethe	12	4	4	20
7		Prerana W. Gharde	12	4	4	20
8		Roshan N. khandare	10	3	4	17
9		Sangita R. Chaudhari	12	4	4	20
10		Shradha R. Bhonde	11	4	4	19
11		Vaishanavi D. Barade	12	4	4	20

Chauhan



[Handwritten Signature]

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

VT

H.O.D

Head Seal
Teacher



**RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR**

Internal Marks Sheet

Exam Name : SECOND SEMESTER M.Sc.(MATHEMATICS) (NEP)

Subject Name : CLASSICAL MECHANICS

College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE

Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 20
1	401345	20201058504304	DNYANESHWARI KUVARLAL BISEN	18
2	401346	2021016601027516	HARSH PRAMOD KUKDE	17
3	401347	20201010012935	HIMANSHU PRASHANT BADWAIK	19
4	401348	20211010020941	KHUSHI RAJESH YADAV	20
5	401349	2014016601098481	MANGESH VITTHALRAO SHINGANE	20
6	401350	194010330	POONAM SURESH KULMETHE	20
7	401351	-	PRERANA WAMANRAO GHARDE	20
8	401352	2020033700005713	ROSHAN NAMDEO KHANDARE	17
9	401353	NU/G/38633	SANGITA RAMESH CHAUDHARI	20
10	401354	20201010012822	SHRADHA RAJESH BHONDE	19
11	401355	20211010021143	VAISHNAVI DIPAK BARADE	20

Print Date & Time: 18-09-2024 04-01-14 PM

H. Chauhan

Signature of Examiner

[Signature]
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Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Mathematics

M.Sc-I Semester-II(NEP)

Classical Mechanics

Unit Test – I

Date: 28th Feb. 2024

Duration: 1 Hour]


[Max mark: 20 Marks

Attempt Any ONE questions

1. (a) Prove that shortest distance between two points in a plane is a straight line. 08
(b) Show that if a cyclic coordinate q is such that dq corresponds to a rotation of the system of particles around some axis, then the conservation of its conjugate momentum corresponds to conservation of angular-momentum. 08
2. (a) A hoop rolls, without slipping down an inclined plane. Show that acceleration of the hoop along the plane is $\frac{1}{2} g \sin \phi$ and fraction force of constraint is $\frac{1}{2} mg \sin \phi$, where m is the mass of the hoop and ϕ is the inclination of plane. 08
(b) Derive the Hamilton's equation from variational principle. 08

(Compulsory)

- (a) If the Homogenous transformations $\bar{q}_i = \bar{q}_i(q_1, q_2, \dots, q_n)$ do not contain time t explicitly, then show that kinetic energy of the system is a homogenous quadratic function of a generalized coordinate system. 04


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**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-I(Sem-II)Session (2023-24)
Subject: Classical Mechanics
Assignment**


Que.1. Show that the constant of motion on generating function of those infinitesimal canonical transformation which leaves the Hamiltonian invariant

Que.2. State and prove Poisson's theorem.

Que.3. Derived angular momentum Poisson brackets relation.

Que.4. Prove that the Poisson bracket of two constant of motion, when the constant not depend on time explicitly, is itself a constant of motion.

Que.5. Show that the Hamiltonian is generator of the system with time.


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VT

Month: Feb - 2024
 Teacher's Name: Dr. Vidhya T. Chauhan

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. I (Mathematics) Sem - II

Attendance Sheet
 (2023 - 2024)

Batch: Sem II
 Subject: Classical mechanics
 Theory / Practical:

S.N	Name	Total Upto	Period	Date																				Total	Progressive Month
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
1	Ku Dnyaneshwari K Bisen			06/02	07/02	08/02	09/02	10/02	11/02	12/02	13/02	14/02	15/02	16/02	17/02	18/02	19/02	20/02	21/02	22/02	23/02	24/02			
2	Harsh P. Kukde			A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P		
3	Himanshu P. Badwaik			P	A	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
4	Khushi R. Yadav			A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P		
5	Mangesh Shigne			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Prerana W. Gharde			A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P		
8	Roshan Namdev khandare			A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P		
9	Sangita R. Chaudhari			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
10	Shradha R. Bhonde			P	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P		
11	Vaishnavi D. Barade			A	A	P	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P		

Chauhan
 Teacher

[Signature]
 Head of Department

Principal

HEAD
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Batch: Sem I
 Subject: *Classical Mechanics*
 Theory / Practical: *M.Sc. I (Mathematics) Sem - II*

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur

Month: *March & April* - 2024
 Teacher's Name: *Dr. Vidhya Chaudhari*

Attendance Sheet

S.N	Name	Total		Period																				Total	Progressive Month	
		Upto	Del/Att	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
1	Dnyaneshwari K Bisen			P	P	A	A	A	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Harsh P. Kukde			A	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	Himanshu P. Badwaik			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Khushi R. Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Mangesh Shighe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Poonam S. Kulmethe			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	Prerana W. Gharde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Roshan Namdev khandare			A	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
9	Sangita R. Chaudhari			P	P	P	P	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
10	Shradha R. Bhonde			P	P	A	A	P	P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
11	Vaishnavi D. Barade			P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Chaudhari
 Teacher

Sangita
 Head of Department

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR,

Principal

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -III(2023-24)

Paper -I(Complex Analysis)

Unit test I&II Mark list

Teacher Name: Chanchal Jain

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

eJain



J. G. Joshi
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.



RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

Internal Marks Sheet

Exam Name : THIRD SEMESTER M.Sc. (MATHEMATICS) (CBCS)(NEW)
Subject Name : COMPLEX ANALYSIS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	265643	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
2	265644	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
3	265645	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
4	265646	20201056403617	PRITI DINESH PATLE	25
5	265647	20201010012746	PRIYA BIMALKUMAR MAITY	25
6	265648	-	RENU KISHORE PATNE	25
7	265649	191040776	SHUBHANGI TOTARAMJI BARDE	25
8	265650	20191011315242	TRUPTI ARUNRAO AKHARE	25
9	265661	2021016600579393	AMISHA BHASKAR WAGHADE	--
10	265663	2021016600731804	ASHISH JANARDHAN GORE	--
11	265664	2021016600579385	MINAL SANJAY MESHARAM	--
12	265666	2021016600737147	SUMEDH NARESH RAMTEKE	--
13	265667	2021016600591107	VAISHNAVI MANOHARRAO VAIDYA	--
14	265668	2021016600696504	YAMINI RAJU BORKAR	--

Print Date & Time: 26-12-2023 01:35:04 PM

Chauhan
26/12/23

Signature of Examiner

(Dr. V. T. Chauhan)

Shrawan
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Mathematics

M.Sc II Semester III

Paper-I Complex Analysis

Unit Test-I

Date: 20th Sep 2023

Duration : 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) Explain, in detail the process of stereographic projection which identifies unit Sphere S in R^3 with extended complex numbers system C_∞ .

(b) State and prove Chain Rule for Analytic functions.

(10)

(10)

OR

2. (a) Let u and v be real-valued functions defined on a region G and suppose that u and v have continuous partial derivatives. Then show that $f : G \rightarrow C$ defined by $f(z) := u(z) + iv(z)$ is analytic iff u and v satisfy the Cauchy-Riemann equations.

(b) Prove that a branch of the logarithm function is analytic and its derivative is z^{-1} .

(10)

(10)


Compulsory Questions

3. (a) If G is open and connected and $f : G \rightarrow C$ is differentiable with $f'(z) = 0$ for all z in G , then show that f is constant.

Let G be either the whole plane C or some open disk. If $u : G \rightarrow R$ is a harmonic function, then show that u has a harmonic conjugate..

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HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-III)Session (2023-24)
Subject: Complex Analysis Assignment**

1. State and prove fundamental theorem of algebra.
2. Let Y be a closed rectifiable curve in C . then show that $n(Y,a)$ is constant for a belonging to a component of $G = C - Y$. further show that $n(Y,a) = 0$ for a belonging to the unbound component of G .
3. Let G be a region and suppose f is a mapping from G to C is analytic and a in G such that $|f(a)| \leq |f(z)|$ for all z in G . show that either $f(a) = 0$ or f is constant.
4. State and prove chain rule for analytic functions.
5. Explain in details the process of stereographic projection which identifies unit spheres S in R^3 with extended complex number system C_∞ .

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S. S. S. A
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem III

Subject : **Complex Analysis**

Theory / Practical :

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
M.Sc. II (Mathematics) Sem - III

Month: **August - 2023**

Teacher's Name: **Chandhal. Jain**

Attendance Sheet

S.N	Name	Total Upto	Date	Period																	Current Month	Progressive Month						
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			18	19	20	Total		
1	Abhishek Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
2	Gunjan Shivprakash Sharma			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Prachi Harichandra Meharkule			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Priti Dinesh Patle			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Priya Bimalkumar Maity			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Renu Kishor Patne			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Shubhangi Totaramji Barde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Trupti Arun Akhare			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Chandhal Jain
Teacher

Chandhal Jain
Head of Department

Principal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem III
 Subject: **Complex Analysis**
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III

Month: **September 2023**
 Teacher's Name: **Chanchal Jain**

Attendance Sheet

S.N	Name	Total		Perit	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Current Month	Progressive Month	
		Upto	Deli Att																										
1	Abhishek Yadav				5/10	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Gunjan Shivprakash Sharma					-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	Prachi Harichandra Meharkule					-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Priti Dinesh Patle					-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Priya Bimalkumar Maity					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Renu Kishor Patne					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Shubhangi Totaramji Barde					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Trupti Arun Akhare					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Jain
 Teacher

Chanchal Jain
 Head of Department

Principal

HEAD
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Section / Batch: Sem III

Subject: **Complex Analysis**

Theory / Practical:

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
M.Sc. II (Mathematics) Sem - III

Month: **October - 2023**

Teacher's Name: **Chandhal Jain**

Attendance Sheet

S.N	Name	Total		Perf	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Current Month		Progressive Month	
		Upto	Deli																							Att	Date		
1	Abhishek Yadav				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
2	Gunjan Shivprakash Sharma				-	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
3	Prachi Harichandra Meharkule				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
4	Priti Dinesh Patle				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
5	Priya Bimalkumar Maity				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
6	Renu Kishor Patne				-	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
7	Shubhangi Totaramji Barde				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
8	Trupti Arun Akhare				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P								

[Signature]
Teacher

[Signature]
Head of Department
HEAD

Principal

Department of Mathematics
Science College, Congress Nagar,
NAGPUR,

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -III(2023-24)
Paper -II(Functional Analysis)

Unit test I&II Mark list
Teacher Name: Chanchal Jain

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

Jain



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HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.



RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

Internal Marks Sheet

Exam Name : THIRD SEMESTER M.Sc. (MATHEMATICS) (CBCS)(NEW)
Subject Name : FUNCTIONAL ANALYSIS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	265643	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
2	265644	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
3	265645	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
4	265646	20201056403617	PRITI DINESH PATLE	25
5	265647	20201010012746	PRIYA BIMALKUMAR MAITY	25
6	265648	-	RENU KISHORE PATNE	25
7	265649	191040776	SHUBHANGI TOTARAMJI BARDE	25
8	265650	20191011315242	TRUPTI ARUNRAO AKHARE	25
9	265661	2021016600579393	AMISHA BHASKAR WAGHADE	--
10	265662	2021016600696477	ASAWARI ANILRAO DESHMUKH	--
11	265663	2021016600731804	ASHISH JANARDHAN GORE	--
12	265664	2021016600579385	MINAL SANJAY MESHARAM	--
13	265667	2021016600591107	VAISHNAVI MANOHARRAO VAIDYA	--
14	265668	2021016600696504	YAMINI RAJU BORKAR	--

Chauhan
26/12/23
Signature of Examiner

(Dr. V. T. Chauhan)

J. G. Wadgaonkar

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR,

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Mathematics
M.Sc II Semester III
Paper-II Functional Analysis
Unit Test-I

Date : 21st Sept 2023

Duration : 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) Prove that a set Y of all sequences of scalars with finitely many non-zero terms is a subspace of l^∞ , but it is not closed. (10)
- (b) Define seminorm on a vector space X . Prove that if P is a seminorm on a vector space X then Null space of P , $N(P)$ is subspace of X and P is a norm on quotient space X/N . (10)

OR

2. (a) Prove that a linear operator T from normed space X to a normed space Y is continuous iff it is bounded. (10)
- (b) Prove that every finite dimensional subspace of a normed space is complete. (10)

Compulsory Questions

3. (a) Prove that a complete subspace of Banach space is closed. (05)



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Department of Mathematics
Science College, Congress Nagar,
NAGPUR.



**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-III)Session (2023-24)
Subject: Functional Analysis**

Que.1. Prove that a dual space X' of a normed space X is Complete.

Que.2. State and proved Bessel's inequality.

Que.3. Prove that a complete subspace of Banach space is closed.

Que.4. Prove that every finite dimensional subspace of a normed space Y continuous iff it is bounded.

Que.5. Proved that the projection on a Hilbert space H is a bounded linear operator.

eJain

Singhwar
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem III

Subject: **Functional Analysis**

Theory / Practical:

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
M.Sc. II (Mathematics) Sem - III

Month: **September - 2023**
Teacher's Name: **Chinchoel. Jain**

Attendance Sheet

S.N	Name	Total		Perit	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Progressive Month	
		Upto	Dell																								Att	Current Month	Month
1	Abhishek Yadav				10/9	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
2	Gunjan Shivprakash Sharma				10/9	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
3	Prachi Harichandra Meharkule				10/9	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
4	Priti Dinesh Patle				10/9	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
5	Priya Bimalkumar Maity				10/9	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Renu Kishor Patne				10/9	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Shubhangi Totaramji Barde				10/9	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	Trupti Arun Akhare				10/9	-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		

Teacher
Teacher

Chinchoel Jain
Head of Department

Principal

HEAD

Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem III

Subject: **Functional Analysis**

Theory / Practical :

Shri Shivaji Education Society Amravati's

Science College, Congress Nagar, Nagpur

M.Sc. II (Mathematics) Sem - III

Month: **October - 2023**

Teacher's Name: **Chanchal Jain**

Attendance Sheet

S.N	Name	Total		Peri	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Current Month		Progressive Month
		Upto	Att																									
1	Abhishek Yadav			3/10		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
2	Gunjan Shivprakash Sharma					-	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
3	Prachi Harichandra Meharkule					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
4	Priti Dinesh Patle					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
5	Priya Bimalkumar Maity					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
6	Renu Kishor Patne					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
7	Shubhangi Totaramji Barde					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
8	Trupti Arun Akhare					P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			

Chanchal Jain
Teacher

Chanchal Jain
Head of Department
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Principal

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -III(2023-24)
Paper -III(Mathematical Method)

Unit test I&II Mark list
Teacher Name: Sandya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

S. Chauhan



S. Chauhan

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.



RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

Internal Marks Sheet

Exam Name : THIRD SEMESTER M.Sc. (MATHEMATICS) (CBCS)(NEW)
Subject Name : METHEMATICAL METHODS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	265643	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
2	265644	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
3	265645	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
4	265646	20201056403617	PRITI DINESH PATLE	25
5	265647	20201010012746	PRIYA BIMALKUMAR MAITY	25
6	265648	-	RENU KISHORE PATNE	25
7	265649	191040776	SHUBHANGI TOTARAMJI BARDE	25
8	265650	20191011315242	TRUPTI ARUNRAO AKHARE	25
9	265661	2021016600579393	AMISHA BHASKAR WAGHADE	--
10	265663	2021016600731804	ASHISH JANARDHAN GORE	--
11	265664	2021016600579385	MINAL SANJAY MESHAM	--
12	265666	2021016600737147	SUMEDH NARESH RAMTEKE	--
13	265667	2021016600591107	VAISHNAVI MANOHARRAO VAIDYA	--
14	265668	2021016600696504	YAMINI RAJU BORKAR	--

Chauhan
26/12/23

Signature of Examiner

(Dr. V.T. Chauhan)

Jagtap

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Mathematics
M.Sc II Semester III
Paper- Mathematical Method
Unit Test-I

Date: 22nd Sept. 2023

Duration : 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) Discuss Laplace Equation of an infinite strip.. (10)
(b) Solve one dim. linear diffusion equation of semi -infinite line with boundary condition $u_x(0, t) = f(t)$, $t \geq 0$ and initial condition $u(x,0) = 0$; $x \geq 0$

(10)

OR

2. (a) Discuss the the problem for motion of a semi infinite beam when its end has a prescribed motion. (10)
(b) Discuss the problem for free transverse vibration of an infinite beam. (10)

Compulsory

3. (a) Define kth movement and kth absolute movement. (05)

C. Shrivastava

S. S. S. S.
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-III)Session (2023-24)
Subject: Mathematical Method**

Que.1. Discuss Laplace equation of an infinite strip.

Que.2. Solve one dim. Linear diffusion equation of semi- infinite line with boundary condition $u_{x(0,t)}=f(t)$, $t > 0$ and initial condition $u(x,0) = 0$, $x > 0$.

Que.3 Discuss the problem for free transverse vibration of an infinite beam.

Que.,4. Define kth movement and kth absolute movement.

Que.5. Discuss the problem for the motion of a semi infinite beam when its end has a prescribed motion.

C. S. Chauhan

S. S. S. S.
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch : Sem III
 Subject : mm
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III

Month : Aug - 2023
 Teacher's Name : Sandhya Chauthan

Attendance Sheet (2023-2024)

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Dell	13	14	17	18	25	26	28	29													
1	Abhishek Yadav		P	P	P	P	P	P	P	P	A	P	P	P	A	P							
2	Gunjan S Sharma		P	P	P	P	P	P	P	P	A	P	P	P	A	P							
3	Prachi H Meharkule		P	P	P	P	P	P	P	P	P	P	P	P	P	P							
4	Priti D Patle		A	A	P	P	P	P	P	P	P	P	P	P	A	A							
5	Priya B Maity		P	P	P	P	P	P	P	P	P	P	P	P	P	P							
6	Renu Ki Patne		-	-	-	-	-	-	-	-	-	-	-	-	-	-							
7	Shubhangi T Barde		P	P	P	P	P	P	P	P	P	P	P	P	P	P							
8	Trupti A Akhare		A	A	P	A	A	A	P	P	A	P	P	A	P	P							

Sandhya Chauthan

Sandhya Chauthan
 Teacher

Head of Department

Principal

HEAD
 Department of Mathematics
 Science College Congress Nagar,
 Amravati, C.F.U.H.

Section / Batch : Sem III
 Subject : M.M,
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III

Month: SEP-2023

Teacher's Name: Sandhya Chauhan

Unit Test

Attendance Sheet (2023-2024)

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
1	Abhishek Yadav	Del	M	D	A	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10
2	Ku Gunjan S Sharma		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	Ku Prachi H Meharkule		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Ku Priti D Patle		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Ku Priya B Maity		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Ku Renu Ki Patne		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	Ku Shubhangi T Barde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Ku Trupti A Akhare		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Sandhya Chauhan

Teacher

Sandhya Chauhan

HEAD

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Principal

Section / Batch : Sem II
 Subject : PPM
 Theory / Practical :

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III

Month: Oct - 2023
 Teacher's Name: Sandhya Chauhan

Attendance Sheet (2023-2024)

S.N.	Name	Period																			Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20
		Deli	Att	3	4	5	6	7	9	10	11	12	16	17	18	19	20	21	22	25	26
1	Abhishek Yadav			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Ku Gunjan S Sharma																				
3	Ku Prachi H Meharkule																				
4	Ku Priti D Patle																				
5	Ku Priya B Maity																				
6	Ku Renu KI Patne																				
7	Ku Shubhangi T Barde																				
8	Ku Trupti A Akhare																				

Sandhya Chauhan

Teacher

Sandhya Chauhan

Principal

Head of Department
HEAD
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -III(2023-24)
Paper -IV(General Relativity)

Unit test I&II Mark list
Teacher Name: Dr. Vidya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25



HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

Internal Marks Sheet

Exam Name : THIRD SEMESTER M.Sc. (MATHEMATICS) (CBCS)(NEW)
Subject Name : GENERAL RELATIVITY
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	265643	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
2	265644	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
3	265645	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
4	265646	20201056403617	PRITI DINESH PATLE	25
5	265647	20201010012746	PRIYA BIMALKUMAR MAITY	25
6	265648	-	RENU KISHORE PATNE	25
7	265649	191040776	SHUBHANGI TOTARAMJI BARDE	25
8	265650	20191011315242	TRUPTI ARUNRAO AKHARE	25
9	265661	2021016600579393	AMISHA BHASKAR WAGHADE	--
10	265662	2021016600696477	ASAWARI ANILRAO DESHMUKH	--
11	265663	2021016600731804	ASHISH JANARDHAN GORE	--
12	265664	2021016600579385	MINAL SANJAY MESHAM	--
13	265665	2021016600692553	MORE SHRUTI MAHADEORAO	--
14	265666	2021016600737147	SUMEDH NARESH RAMTEKE	--
15	265668	2021016600696504	YAMINI RAJU BORKAR	--

Print Date & Time: 26-12-2023 02-01-03 PM

Chauhan
26/12/23

Signature of Examiner

(Dr. V. T. Chauhan)

[Signature]
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

**Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur**
Department of Mathematics
M.Sc II Semester III
Paper- General Relativity
Unit Test-I
Date: 23rd Sept. 2023

Duration : 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) State and prove Bianchi Identity. 10
(b) Show that the covariant derivative of a contravariant vector is a mixed tensor of rank two. 10
2. (a) Obtain the differential equation of geodesic on a given space. 10
(b) Prove that Christoffel's symbol are not tensor. 10

Compulsory

3. What are Riemann's symbols of second kind ? 05

VT

Chauhan

[Signature]
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR,

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-III)Session (2023-24)
Subject: General Relativity**

Que.1. Derived Schwarzschild Exterior solution for Einstein empty space time field equations.

Que.2. Find the expression for energy momentum tensor T^{ij} for perfect fluid.

Que.3. Show that the Poisson's momentum can be recovered from the field equation of general theory of relativity.

Que.4. Discuss the phenomenon of red shift in general relativity.

Que.5. Prove that Christoffel's symbol are not tensor.

Shauhan

[Signature]
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

V T

Section / Batch :
 Subject : *G.R*
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III
 Session: 2023-2024

Month: *Aug - 2023*
 Teacher's Name: *Dr. V. T. Chauhan*

Attendance Sheet

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1	Abhishek Yadav	Date	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2	Gunjan S Sharma		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Prachi H Meharkule		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Priti D Patle		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Priya B Maity		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Renu Ki Patne		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	Shubhangi T Barde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Trupti A Akhare		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Chauhan
 Teacher

Head of Department

Principal

[Signature]

HEAD
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Section / Batch :
 Subject : *G.R.*
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III
 Session: 2023-2024

Month: *Sep - 2023*
 Teacher's Name: *Dr. V. T. Chauhan*

Attendance Sheet

S.N.	Name	Peri																			Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20
		Date: <i>23/09/23</i>																			
1	Abhishek Yadav																				
2	Gunjan S Sharma																				
3	Prachi H Meharkule																				
4	Priti D Patle																				
5	Priya B Maity																				
6	Renu Ki Patne																				
7	Shubhangi T Barde																				
8	Trupti A Akhare																				

Chauhan
 Teacher

Sharma
 Head of Department

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Principal

Section / Batch :
 Subject : G.R.
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III
 Session: 2023-2024

Month: Oct - 2023
 Teacher's Name: Dr. V. T. Chauhan

Attendance Sheet

S.N.	Name	Attendance																			Total
		Peri 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20
		Del	At	Date																	
1	Abhishek Yadav				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Gunjan S Sharma				.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	Prachi H Meharkule				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Priti D Patle				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Priya B Maity				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Renu Ki Patne				.	.	.	.	P	P	.	.	.	P	P	P	P	P	P	P	P
7	Shubhangi T Barde				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Trupti A Akhare				.	.	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P

Chauhan
 Teacher

Saxena
 Head of Department

Principal

HEAD
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -III(2023-24)
Paper -V(Operation Research)

Unit test I&II Mark list
Teacher Name: Dr. Vidya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25



Dr. Vidya Chauhan

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

Internal Marks Sheet

Exam Name : THIRD SEMESTER M.Sc. (MATHEMATICS) (CBCS)(NEW)
Subject Name : OPERATIONS RESEARCH I
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : Winter-2023

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	265643	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
2	265644	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
3	265645	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
4	265646	20201056403617	PRITI DINESH PATLE	25
5	265647	20201010012746	PRIYA BIMALKUMAR MAITY	25
6	265648	-	RENU KISHORE PATNE	25
7	265649	191040776	SHUBHANGI TOTARAMJI BARDE	25
8	265650	20191011315242	TRUPTI ARUNRAO AKHARE	25
9	265661	2021016600579393	AMISHA BHASKAR WAGHADE	--
10	265663	2021016600731804	ASHISH JANARDHAN GORE	--
11	265664	2021016600579385	MINAL SANJAY MESHARAM	--

Chauhan
26/12/23

Signature of Examiner

Dr. V. T. Chauhan

Print Date & Time: 26-12-2023 02-07-00 PM

JKWAS
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

**Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
Department of Mathematics
M.Sc II Semester III
Paper- Operation Research-I
Unit Test-I**

Date: 23rd Sept. 2023

Duration : 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) Find the maximum value of :

$$Z = 107x_1 + x_2 + 2x_3$$

subject to the constraints :

$$14x_1 + x_2 - 6x_3 + 3x_4 = 7$$

$$16x_1 + x_2 - 6x_3 \leq 5$$

$$3x_1 - x_2 - x_3 \leq 0$$

$$x_1, x_2, x_3, x_4 \geq 0$$

10

- (b) Use two phase Simplex method to :

$$\text{Max } Z = 5x_1 + 8x_2$$

subject to the constraints :

$$3x_1 + 2x_2 \geq 3$$

$$x_1 + 4x_2 \geq 4$$

$$x_1 + x_2 \leq 5$$

$$x_1, x_2 \geq 0$$

10

2. (a) Use penalty method to :

$$\text{Max } Z = 6x_1 + 4x_2$$

subject to the constraints :

$$2x_1 + 3x_2 \leq 30$$

$$3x_1 + 2x_2 \leq 24$$

$$x_1 + x_2 \geq 3$$

$$x_1, x_2 \geq 0$$

10

- (b) Use dual Simplex method to :

$$\text{Min } Z = x_1 + x_2$$

subject to the constraints :

$$2x_1 + x_2 \geq 4$$

$$x_1 + 7x_2 \geq 7$$

$$x_1, x_2 \geq 0$$

10

COMPUSORY

- (a) Proved that dual of the dual problem is the Primal problem.

05

V.T.

Chauhan

J. S. Was
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II (Sem-III) Session (2023-24)
Subject: Operation Research-I
Assignment**

Que. 1 Obtain all the basic feasible solutions to the following system of linear equations: $x_1 + 2x_2 + x_3 = 4$: $2x_1 + x_2 + 5x_3 = 5$

Que. 2 Solve LPP by simplex method

$$\text{Max } Z = 2x_1 + 5x_2$$

subject to $0 \leq x_1 \leq 400$

$$0 \leq x_2 \leq 300$$

$$x_1 + x_2 \leq 600$$


and $x_1, x_2 \geq 0$

Que. 3 Solve the Integer Programming Problem: $\text{Max } Z = 2x_1 + 3x_2$
Subject to constraints: $-3x_1 + 7x_2 \leq 14$, $7x_1 - 3x_2 \leq 14$
 $x_1, x_2 \geq 0$ and all are Integers.

Que.4 Solve the Mixed-Integer Programming Problem: $\text{Max } Z = 7x_1 + 9x_2$
Subject to constraints: $-x_1 + 3x_2 \leq 6$, $7x_1 + x_2 \leq 35$,
 $x_1, x_2 \geq 0$ and x_1 is an integer.

Que.5 Solve the NLPP: Optimize $Z = 4x_1^2 + 2x_2^2 + x_3^2 - 4x_1x_2$
Subject to constraints: $x_1 + x_2 + x_3 = 15$,
 $2x_1 - x_2 + 2x_3 = 20$

VF



HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch :
 Subject : OR - I
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III
 Session: 2023-2024

Month: Aug - Sep, 2023
 Teacher's Name:

Attendance Sheet

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Del	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
1	Abhishek Yadav		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2	Gunjan S Sharma		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Prachi H Meharkule		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Priti D Patle		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Priya B Maity		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Renu Ki Patne		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Shubhangi T Barde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Trupti A Akhare		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	


 Teacher

Head of Department

Principal



HEAD

Department of Mathematics
 Science College, Congress Nagar,
 Nagpur.

Section / Batch :
 Subject : OR-I
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - III
 Session: 2023-2024

Month: Oct - 2023
 Teacher's Name: Dr. V. T. Chauhan

Attendance Sheet

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Date																					
1	Abhishek Yadav				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Gunjan S Sharma				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	Prachi H Meharkule				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Priti D Patle				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Priya B Maity				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Renu Ki Patne				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	Shubhangi T Barde				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Trupti A Akhare				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Chauhan
 Teacher

Chauhan

Head of Department
HEAD
 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.
 Principal

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -IV (2023-24)
Paper -I(Dynamical System)
Unit test I&II Mark list
Teacher Name: Chanchal Jain

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

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S. Jain
HEAD
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Science College, Congress Nagar
NAGPUR.

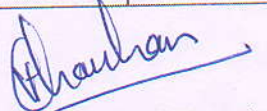


**RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR**


Internal Marks Sheet

Exam Name : FOURTH SEMESTER M.Sc. (MATHEMATICS) (CBCS)
Subject Name : DYNAMICAL SYSTEMS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	382493	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
2	382494	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
3	382495	20201056403617	PRITI DINESH PATLE	25
4	382496	20201010012746	PRIYA BIMALKUMAR MAITY	25
5	382497	20231010010086	RENU KISHORE PATNE	25
6	382498	191040776	SHUBHANGI TOTARAMJI BARDE	25
7	382499	20191011315242	TRUPTI ARUNRAO AKHARE	25
8	382500	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
9	382509	2021016600696493	SUPRIYA SUDESH POHARE	--
10	382510	2021016600591107	VAISHNAVI MANOHARRAO VAIDYA	--
11	382511	2021016600696504	YAMINI RAJU BORKAR	--
12	382512	2021016600731804	ASHISH JANARDHAN GORE	--
13	382513	2021016600737147	SUMEDH NARESH RAMTEKE	--


Signature of Examiner

Print Date & Time: 18-09-2024 04-05-42 PM


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Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Science College, Congress Nagar, Nagpur

Department of Mathematics

M.Sc II Semester-IV

Paper-I Dynamical System

Unit Test-I

Date: 24th Feb 2024

Duration : 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions
Unit-I

1. (a) Let C^1 map $f : W \rightarrow E$ be given. Suppose two solution $u(t)$ and $V(t)$ of $x' = f(x)$ are defined on the same open interval J containing t_0 and satisfying $u(t_0) = v(t_0)$ then prove that $u(t) = v(t)$, For $t \in J$. (10)

- (b) Show that Ω is an open set in $R \times W$.
Also Show that $\Phi : \Omega \rightarrow W$ is a continuous map. (10)

OR

2. (a) The map Φ has the following property, $\Phi_{s+t} = \Phi_s[\Phi_t(x)]$ in the sense that if one side of equation is defined so is the other and they are equal. (10)

- (b) The map Φ_t sends U onto open set V & Φ_{-t} is defined on V & sends V onto U . The composition $\Phi_{-t}\Phi_t$ is the identity map of U , the composition $\Phi_t\Phi_{-t}$ is identity map of V . (10)

Compulsory Questions

3. (a) Let $U : [0, \alpha] \rightarrow R$ be continuous & non-negative, Suppose $c \geq 0$, $k \geq 0$ are such that $U(t) \leq C + \int_0^t ku(s)ds$. For all $t \in [0, \alpha]$ then Show that $u(t) \leq ce^{kt}$, for all $t \in [0, \alpha]$. (05)

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**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-IV)Session (2023-24)
Subject: Dynamical System
Assignment**

Que.1. Prove that hyperbolic equilibrium point is either unstable or asymptotically stable.

Que.2. Show that Ω is an open set in $R \times W$. also show that ϕ is mapping from Ω to W is a continuous map.

Que.3. Show that at an equilibrium of Gradient system, the eigen value are real.

Que.4. Let \bar{x} be an isolated minimum of V . then show that \bar{x} is a asymptotically stable equilibrium of the gradient system.

$$x' = -\text{grad } V(x)$$

Que.5. Let $W \subset E$ be open and let $F: W \rightarrow E$ continuously differentiable. Suppose $F(\bar{x}) = 0$ and \bar{x} is a stable equilibrium point of the equation $x' = f(x)$ than no eigen value of $Df(\bar{x})$ has positive real part.

eJain

Agarwal
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR,

Section / \Batch: Sem IV
 Subject : **Dynamical System**
 Theory / Practical :

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur

M.Sc. II (Mathematics) Sem - IV
 Attendance Sheet (2023 - 2024)

Month: **Feb - 2024**
 Teacher's Name: **Chanchal Jain**

S.N	Name	Total		Perit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Current Month		Progressive Month
		Upto	Deli																						Att	Date	
1	Abhishek Yadav				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
2	Ku Gunjan Shivprakash Sharma				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
3	Ku Prachi Harichandra Meharkule				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
4	Ku Priti Dinesh Patle				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
5	Ku Priya Bimalkumar Maity				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
6	Ku Renu Kishor Patne				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
7	Ku Shubhangi Totaramji Barde				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						
8	Ku Trupti Arun Akhare				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P						

Chanchal Jain
 Teacher

Chanchal Jain
 Head of Department

Principal

Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem IV
 Subject: **Dynamical System**
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - IV

Month: **March - 2024**
 Teacher's Name: **Chanchal Jain**

Attendance Sheet (2023-2024)

S.N	Name	Total		Perf	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Current Month		Progressive Month
		Upto	Deli																						Att	Date	
1	Abhishek Yadav				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
2	Gunjan Shivprakash Sharma				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
3	Prachi Harichandra Meharkule				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
4	Priti Dinesh Patle				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
5	Priya Bimalkumar Maity				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
6	Renu Kishor Patne				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
7	Shubhangi Totaramji Barde				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
8	Trupti Arun Akhare				P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			

Chanchal Jain
 Teacher

Chanchal Jain
 Head of Department

Principal

Department of Mathematics
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NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics

M.Sc. II Semester -IV (2023-24)

Paper -II(Partial Differential Equation)

Unit test I&II Mark list

Teacher Name: Sandya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

S. Chauhan



S. Chauhan

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Science College, Congress Nagar,
NAGPUR,



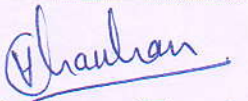
RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR


Internal Marks Sheet

Exam Name : FOURTH SEMESTER M.Sc. (MATHEMATICS) (CBCS)
Subject Name : PARTIAL DIFFERENTIAL EQUATIONS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	382493	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
2	382494	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
3	382495	20201056403617	PRITI DINESH PATLE	25
4	382496	20201010012746	PRIYA BIMALKUMAR MAITY	25
5	382497	20231010010086	RENU KISHORE PATNE	25
6	382498	191040776	SHUBHANGI TOTARAMJI BARDE	25
7	382499	20191011315242	TRUPTI ARUNRAO AKHARE	25
8	382500	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
9	382506	2021016600696477	ASAWARI ANILRAO DESHMUKH	--
10	382508	2021016600591073	SRUSHTI VIJAY BANGALKAR	--
11	382509	2021016600696493	SUPRIYA SUDESH POHARE	--
12	382510	2021016600591107	VAISHNAVI MANOHARRAO VAIDYA	--
13	382511	2021016600696504	YAMINI RAJU BORKAR	--
14	382512	2021016600731804	ASHISH JANARDHAN GORE	--
15	382513	2021016600737147	SUMEDH NARESH RAMTEKE	--

Print Date & Time: 18-09-2024 04-07-20 PM


Signature of Examiner


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Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
Department of Mathematics
M.Sc II Semester III
Paper- Partial Differential Equation
Unit Test-I
Date: 26th Feb 2024

Duration : 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE question

1. (a) solve the following by using charpits method $p^2 + q^2 = x + y$. (10)
- (b) Solve by using jaccobi's method $p^2x + q^2y = z$. (10)

OR

2. (a) Find the complete integral of the equation $p^2x + qy - z = 0$ and derived
The equation of the integral surface containing the line $y=1, x+z=1$ (10)


(b) Solve $zz_x + z_y = 1$ with initial data curve $C: x_0 = s, y_0 = s, z_0 = \frac{1}{2}s$
for $0 \leq s \leq 1, x \leq 0$

(10)

Compulsory

3. (a) classify the second order pde. (05)

Shankar


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**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-IV)Session (2023-24)
Subject: Partial Differential Equation
Assignment**

Que. 1. Solve the following equation by Charpits methods $p^2 + q^2 = x + y$

Que.2. Solve by using Jaccobi's Method $p^2x + q^2y = z$

Que. 3. Classify the second order PDE.

Que. 4 . Classify the integrals of second order PDE.

Bhauhan

Shant
**HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.**

Section / Batch: Sem IV
 Subject: P.D.E.
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - IV
 Attendance Sheet (2023 - 2024)

Month: January - 2024
 Teacher's Name: Sandhya Chauhan

S.N	Name	Attendance Sheet (2023 - 2024)																				Total	Progressive Month
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
1	Abhishek Yadav	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
2	Gunjan Shivprakash Sharma	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
3	Prachi Harichandra Meharkule	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
4	Priti Dinesh Patle	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
5	Priya Bimalkumar Maity	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
6	Renu Kishor Patne	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
7	Shubhangi Totaramji Barde	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	Trupti Arun Akhare	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		

(Signature)
 Teacher

(Signature)
 Head of Department

Principal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem IV
 Subject: PDE
 Theory / Practical:

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - IV

Month: Feb - 2024
 Teacher's Name: Sandhya Chaudhoni

Attendance Sheet (2023-24)

S.N	Name	Total										Total	Progressive Month											
		1	2	3	4	5	6	7	8	9	10			11	12	13	14	15	16	17	18	19	20	
		Del	At																					
1	Abhishek Yadav	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Gunjan Shivprakash Sharma	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	Prachi Harichandra Meharkule	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Priti Dinesh Patle	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Priya Bimalkumar Maity	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Renu Kishor Patne	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	Shubhangi Totaramji Barde	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Trupti Arun Akhare	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Chaudhoni

Teacher

Sandhya Chaudhoni

Head of Department

Principal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch : \Batch: SemIV
 Subject : PDE
 Theory / Practical :

Month : March -- 23
 Teacher's Name Sandhya Chauhan

M.Sc. II (Mathematics) Sem - IV

Attendance Sheet 2023-24

S.N.	Name	Periods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
1	265643	Abhishek Yadav	01/03	02/03	4/3	5/3	7/03	11/03	12/03	14/03	15/03	21/03	22/03	23/03	24/03	28/03								
2	265644	Ku Gunjan Shivprakash Sharma	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
3	265645	Ku Prachi Harichandra Meharkule	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
4	265646	Ku Priti Dinesh Patle	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
5	265647	Ku Priya Bimalkumar Maity	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
6	265648	Ku Renu Kishor Patne	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
7	265649	Ku Shubhangi Totaramji Barde	P	P	P	P	P	P	P	P	P	P	P	P	P	P								
8	265650	Ku Trupti Arun Akhare	P	P	P	P	P	P	P	P	P	P	P	P	P	P								

Teacher



Head of Department



Principal

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 Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics

M.Sc. II Semester -IV (2023-24)

Paper -III(Advanced Numerical Method)

Unit test I&II Mark list

Teacher Name: Chanchal Jain

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

eJain



Chanchal Jain
HEAD
Department of Mathematics
Science College, Congress Nagar
NAGPUR.

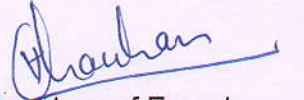


RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR


Internal Marks Sheet

Exam Name : FOURTH SEMESTER M.Sc. (MATHEMATICS) (CBCS)
Subject Name : ADVANCED NUMERICAL METHODS
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	382493	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
2	382494	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
3	382495	20201056403617	PRITI DINESH PATLE	25
4	382496	20201010012746	PRIYA BIMALKUMAR MAITY	25
5	382497	20231010010086	RENU KISHORE PATNE	25
6	382498	191040776	SHUBHANGI TOTARAMJI BARDE	25
7	382499	20191011315242	TRUPTI ARUNRAO AKHARE	25
8	382500	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
9	382507	2021016600693661	JYOTI BRIJLAL BISEN	--
10	382508	2021016600591073	SRUSHTI VIJAY BANGALKAR	--
11	382509	2021016600696493	SUPRIYA SUDESH POHARE	--
12	382510	2021016600591107	VAISHNAVI MANOHARRAO VAIDYA	--
13	382511	2021016600696504	YAMINI RAJU BORKAR	--
14	382512	2021016600731804	ASHISH JANARDHAN GORE	--
15	382513	2021016600737147	SUMEDH NARESH RAMTEKE	--


Signature of Examiner

Print Date & Time: 18-09-2024 04-07-57 PM


HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR,

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
Department of Mathematics
M.Sc-II Semester-IV
Advance Numerical Method
Unit Test - I
Date: 27th Feb. 2024

Duration: 1 Hour]

[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) Obtain the real roots of the following iteration by Newton's Method (10)
 $x^6 - x - 1 = 0$
- (b) Discuss the comparison of Newton's Method and Secant Method. (10)

OR

2. (a) Find the real root of equation $x^3 = 1 - x^2$ on $[0,1]$ with an accuracy of 10^{-4} ,
Using one point iteration method. (10)
- (b) Show that the equation $f(x) = 0$ with
 $f(x) = x^4 - 5.4x^3 + 10.56x^2 - 8.954x + 2.7951$ has a triple root near 1 and
hence find the triple root by Newton's method. (10)

Compulsory Questions

3. (a) Discuss Secant Method for Root finding. (05)

eJain

S. K. Wadgaonkar

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Department of Mathematics
Science College, Congress Nagar,
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**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-IV)Session (2023-24)
Subject: Advance Numerical Method
Assignment**

Que.1. Prove that a hyperbolic equilibrium point is either unstable or asymptotically stable.

Que. 2. Show that an equilibrium of Gradient system , the eigen values are real .

Que. 3. Let \bar{x} be an isolated minimum of V . then show that \bar{x} is asymptotically stable equilibrium of the Gradient system $x' = -grad V(x)$.

Que. 4. Discuss Secant method for root finding.

Que. 5. Discuss the comparison of Newton's method and Secant method.

ejeim

Skumar
HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

Section / Batch: Sem IV

Subject: **Advanced Numerical Method**
Theory / Practical :

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
M.Sc. II (Mathematics) Sem - IV

Month: **April - 2024**
Teacher's Name: **Chanchal Jain**

Attendance Sheet (2023-2024)

S.N	Name	Total Upto	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total		Progressive Month		
																								Deli	Att		Current Month	
1	Abhishek Yadav			10/4	11/4	12/4	13/4	14/4	15/4	16/4	17/4	18/4	19/4	20/4	21/4	22/4	23/4	24/4										
2	Ku Gunjan Shivprakash Sharma			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Ku Prachi Harichandra Meharkule			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Ku Priti Dinesh Patle			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Ku Priya Bimalkumar Maity			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Ku Renu Kishor Patne			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Ku Shubhangi Totaramji Barde			P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Ku Trupti Arun Akhare			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chanchal Jain
Teacher

Chanchal Jain
Head of Department

Principal

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR.

SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -IV (2023-24)

Paper -IV(Cosmology)

Unit test I&II Mark list

Teacher Name: Dr. Vidhya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

Chauhan

VH



J. S. Wad

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NAGPUR.

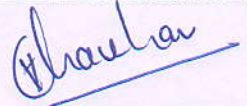


RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR


Internal Marks Sheet

Exam Name : FOURTH SEMESTER M.Sc. (MATHEMATICS) (CBCS)
Subject Name : ELECTIVE : COSMOLOGY
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	382493	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
2	382494	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
3	382495	20201056403617	PRITI DINESH PATLE	25
4	382496	20201010012746	PRIYA BIMALKUMAR MAITY	25
5	382497	20231010010086	RENU KISHORE PATNE	25
6	382498	191040776	SHUBHANGI TOTARAMJI BARDE	25
7	382499	20191011315242	TRUPTI ARUNRAO AKHARE	25
8	382500	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
9	382509	2021016600696493	SUPRIYA SUDESH POHARE	--
10	382511	2021016600696504	YAMINI RAJU BORKAR	--
11	382512	2021016600731804	ASHISH JANARDHAN GORE	--


Signature of Examiner

Print Date & Time: 18-09-2024 04-08-33 PM


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Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Mathematics

M.Sc-II Semester-IV

Cosmology

Unit Test - I

Date: 28th Feb. 2024

[Max mark: 25 Marks

Duration: 1 Hour]

Attempt Any ONE questions

1. (a) Derive Einstein static universe and explain its comparison with actual universe. 10
(b) Explain the geometry of the de-sitter model of the universe. 10
2. (a) Derive the general features of de-sitter universe and discuss how far they agree with the actual universe. 10
(b) Discuss the motion of test particle in Einstein universe. 10
3. (a) Show that de- sitter universe is Einstein space. 05



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**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II(Sem-IV)Session (2023-24)
Subject: Cosmology
Assignment**

- Que. 1. Explain Hubbel's law in detail.
- Que. 2. Find the expression of Red shift z in R-W model.
- Que. 3. Discuss the Radial motion an light rays in R-W model.
- Que. 4. Discuss the motion of test particle in Einstein Universe.
- Que. 5. Show that De-sitter universe in Einstein space.



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Department of Mathematics
Science College, Congress Nagar,
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VT

Section / Batch :
 Subject : *cosmology*
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - IV
 Session: 2023-2024

Month: Jan - Feb, 2024
 Teacher's Name: *Dr. Vidhyacharan*

Attendance Sheet

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Delia																					
1	Abhishek Yadav		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2	Ku Gunjan S Sharma		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Ku Prachi H Meharkule		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Ku Priti D Patle		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Ku Priya B Maity		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Ku Renu Ki Patne		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Ku Shubhangi T Barde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Ku Trupti A Akhare		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

Abhishek Yadav
 Teacher

Dr. Vidhyacharan
 Head of Department

Principal

HEAD
 Department of Mathematics
 Science College, Congress Nagar,

Month: March - April 2024
 Teacher's Name: Dr. V. F. Chauhan

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - IV
 Session: 2023-2024

Section / Batch :
 Subject : Cosmology
 Theory / Practical

Attendance Sheet

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Deli	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
1	Abhishek Yadav		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2	Ku Gunjan S Sharma		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
3	Ku Prachi H Meharkule		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
4	Ku Priti D Patle		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
5	Ku Priya B Maity		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
6	Ku Renu Ki Patne		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
7	Ku Shubhangi T Barde		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
8	Ku Trupti A Akhare		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	


 Teacher


 Head of Department

Principal

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SHRI SHIVAJI EDUCATION SOCIETY AMARAVATI'S
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR.

Department of Mathematics
M.Sc. II Semester -IV (2023-24)
Paper -V(Operation Research -II)

Unit test I&II Mark list

Teacher Name: Dr. Vidhya Chauhan

Sr. no.	Roll No.	Name of Student	Unit Test (10)	Assignment (05)	Attendance (05)	Seminar (05)	Total (25)
1		Abhishek Yadav	10	5	5	5	25
2		Gunjan Shivprakash Sharma	10	5	5	5	25
3		Prachi Harichandra Meharkule	10	5	5	5	25
4		Priti Dinesh Patle	10	5	5	5	25
5		Priya Bimalkumar Maity	10	5	5	5	25
6		Renu Kishor Patne	10	5	5	5	25
7		Shubhangi Totaramji Barde	10	5	5	5	25
8		Trupti Arun Akhare	10	5	5	5	25

Vidhya Chauhan



J. G. Was

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Science College, Congress Nagar
NAGPUR.

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

Internal Marks Sheet

Exam Name : FOURTH SEMESTER M.Sc. (MATHEMATICS) (CBCS)
Subject Name : CORE SUBJECT CENTRIC : OPERATIONS RESEARCH -II
College Name : (100) SHRI SHIVAJI SCIENCE COLLEGE
Session : SUMMER-2024

Sr. No.	SEAT NO	ENROLLMENT NO	STUDENT NAME	Marks / Max 25
1	382493	20201055210451	GUNJAN SHIVPRAKASH SHARMA	25
2	382494	20201010012730	PRACHI HARICHANDRA MEHARKULE	25
3	382495	20201056403617	PRITI DINESH PATLE	25
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8	382500	20201010012888	ABHISHEK AJAY KUMAR YADAV	25
9	382511	2021016600696504	YAMINI RAJU BORKAR	--
10	382512	2021016600731804	ASHISH JANARDHAN GORE	--
11	382513	2021016600737147	SUMEDH NARESH RAMTEKE	--

Chauhan

Signature of Examiner

Print Date & Time: 18-09-2024 04-09-10 PM

J. G. N. S.

HEAD
Department of Mathematics
Science College, Congress Nagar,
NAGPUR,

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur
Department of Mathematics
M.Sc-II Semester-IV
Operation Research-II
Unit Test -I
Date: 24th Feb. 2024

Duration: 1 Hour]


[Max mark: 25 Marks

Attempt Any ONE questions

1. (a) Solve the following IPP :
Max $Z = 3x_1 + x_2 + 3x_3$
subject to the constraints :
 $-x_1 + 2x_2 + x_3 \leq 4,$
 $4x_2 - 3x_3 \leq 2,$
 $x_1 - 3x_2 + 2x_3 \leq 3,$
 $x_1, x_2, x_3 \geq 0$ and are integers. 10
- (b) Solve the following IPP :
Max $Z = 20x_1 + 40x_2 + 30x_3$
subject to the constraints :
 $3x_1 + 4x_2 + 2x_3 \leq 60,$
 $2x_1 + x_2 + 2x_3 \leq 40,$
 $x_1 + 3x_2 + 2x_3 \leq 80,$
 $x_1, x_2, x_3 \geq 0$ and are integers. 10
2. (a) Solve the following IPP :
Min $Z = x_1 - 3x_2$
subject to the constraints :
 $x_1 + x_2 \leq 5,$
 $-2x_1 + 4x_2 \leq 11,$
 $x_1, x_2 \geq 0$ and x_2 is an integer. 10
- (b) Use branch and bound method to solve the following LPP :
Max $Z = 7x_1 + 9x_2$
subject to the constraints :
 $-x_1 + 3x_2 \leq 6,$
 $7x_1 + x_2 \leq 35,$
 $x_2 \leq 7,$
 $x_1, x_2 \geq 0$ and are integers. 10
3. (a) What is the need for integers programming. 05

VT




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Science College, Congress Nagar,
NAGPUR.

**S.S.E.S.A's Science College,
Congress Nagar, Nagpur
Department of Mathematics
M.Sc.-II (Sem-IV) Session (2023-24)
Subject: Operation Research -II
Assignment**

Que. 1 Solve the Integer Programming Problem: $\text{Max } Z = x_1 - x_2$
Subject to constraints:

$$x_1 + x_2 \leq 4,$$

$$6x_1 + 2x_2 \leq 9$$

$x_1, x_2 \geq 0$ and all are Integers.

Que.2 Use Revised Simplex Method to solve the LPP: $\text{Max } Z = 2x_1 + x_2$
Subject to constraints:

$$3x_1 + 4x_2 \leq 6,$$

$$6x_1 + x_2 \leq 3,$$

$$x_1, x_2 \geq 0$$

Que.3 Use Bounded Variable technique to solve the following LPP:

$$\text{Max } Z = x_2 + 3x_3$$

Subject to constraints: $x_1 + x_2 + x_3 \leq 10,$


$$x_1 - 2x_3 \geq 0$$

$$2x_2 - x_3 \leq 10$$

$$0 \leq x_1 \leq 8, 0 \leq x_2 \leq 4, 0 \leq x_3$$

Que.4 A company plans to consume 760 pieces of particular components. Past records indicate that purchasing department had used Rs.12,000 for placing 15,000 orders. The average inventory was valued at Rs. 45,000 and the total storage cost was Rs. 7,650 which included wages, rent, taxes, insurance etc. related to store department. The company borrows capital at the rate of 10% a year. If the price of a component is Rs. 12 and the order size is of 10 components, determine: purchase cost, purchase expenses, storage expenses, capital cost and total cost per year.

Que. 5 Discuss the EOQ problem with one price break


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Department of Mathematics
Science College, Congress Nagar,
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VT

Section / Batch : OR-II
 Subject : Theory / Practical
 Month: Feb - March - 2024
 Teacher's Name: Dr. Vidhya T. Chauhan

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - IV
 Session: 2023-2024

Attendance Sheet

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
			Deji	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
1	Abhishek Yadav																						
2	Ku Gunjan S Sharma																						
3	Ku Prachi H Meharkule																						
4	Ku Priti D Patle																						
5	Ku Priya B Maity																						
6	Ku Renu Ki Patne																						
7	Ku Shubhangi T Barde																						
8	Ku Trupti A Akhare																						

Chauhan
 Teacher

Head of Department
 HEAD

Principal

Department of Mathematics
 Science College, Congress Nagar,
 NAGPUR.

Section / Batch :
 Subject : OR-II
 Theory / Practical

Shri Shivaji Education Society Amravati's
 Science College, Congress Nagar, Nagpur
 M.Sc. II (Mathematics) Sem - IV
 Session: 2023-2024

Month: March-April-2024
 Teacher's Name: Dr. Vidya T. Chauhan

Attendance Sheet

S.N.	Name	Peri	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
		Delim																					
1	Abhishek Yadav		P	P	P	P	P	P	P	P	P	P	P	P	P								
2	Gunjan S Sharma		.	.	.	.	.	.	.	.	.	.	.	.	.
3	Prachi H Meharkule		P	P	P	P	P	P	P	P	P	P	P	P	P								
4	Priti D Patle		P	P	P	P	P	P	P	P	P	P	P	P	P								
5	Priya B Maity		.	.	.	.	.	.	.	.	.	.	.	.	.
6	Renu Ki Patne		.	.	.	.	.	.	.	.	.	.	.	.	.
7	Shubhangi T Barde		P	P	P	P	P	P	P	P	P	P	P	P	P								
8	Trupti A Akhare		P	.	.	.	.	.	.	.	.	.	.	.	.

Chauhan
 Teacher

Prasanna
 Head of Department

Head of Department
 HEAD

Principal

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 Science College, Congress Nagar,
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