

Sonopant Dandekar Shikshan Mandali's Sonopant Dandekar Arts, V.S. Apte Commerce & M.H. Mehta Science College, Palghar

Department of Mathematics

Presents

Certificate Course in Basic Concepts & Skills in Mathematics

Academic Year: 2022-23

DEPARTMENT OF MATHEMATICS Certificate Course in Basic Concepts and Skills in Mathematics.

Programme	Basic Concepts and Skills in Mathematics
Objectives	 The main objective of this course is to give the overview of the basic concepts and basic skills of Mathematics to the students and introduce with its applications to problem solving and logical skills. Some important objectives of this course are: Understanding basic concepts, formulae and different rules in different subfields of mathematics like Analysis, Linear Algebra, Abstract Algebra, Probability Theory, Discrete Mathematics, Graph Theory, Calculus and Statistics. Become confident in using Mathematics to analyse & solve problems both in the field of their study and in real-life situations. Develop the mathematical curiosity & use inductive & deductive reasoning when solving problems. Have a deeper understanding of mathematical concepts & theory. Develop the knowledge, skills & attitudes necessary to pursue further studies in mathematics.
Duration of	40 sessions (Each session of 1 hour)
Training	
Syllabus Committee	 Prof. Dipali Mali (Course coordinator, Head, Mathematics Dept.) Prof. Shirin Memon (Assistant professor, Mathematics Dept.) Prof. Nidhi Mali (Assistant professor, Mathematics Dept.) Prof. Ishrat Gawandi (Assistant professor, Mathematics Dept.) Prof. Husnawaz Contractor (Assistant professor, Mathematics Dept.)
Course Fees	Free
Eligibility	Degree students of Science.
Testing	• Assignments will be given topic wise and assessed time to time.

	• Total evaluation will be out of 60 marks. Written Test : 40 marks Assignments : 20 marks
Certificate	After successful completion of the course, participants will get certificate from college.
Advisory Committee	 Dr. Kiran Save (Principal) Prof. Mahesh Deshmukh (Vice Principal & IQAC Coordinator) Dr. Tanaji pol (Vice Principal) Mrs. Dipali Mali (Course Coordinator, Head, Mathematics dept.)

Prus.

Asst. Prof. Dipali Mali Head of Department of Mathematics

Dr. Kiran Save

PRINEIRALipal Sonopant Dandekar Arts College, V.S. Apte Commerce College & M.H. Mehta Science College PALGHAR (W.R.) Dist. Palghar, Pin-401404

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Proposal

Sonopant Dandekar Shikshan Mandali's SONOPANT DANDEKAR ARTS, V.S. APTE COMMERCE AND M.H. MEHTA SCIENCE COLLEGE, Palghar.

Department of Mathematics

Date: 12th April, 2023

To, The Principal, Sonopant Dandekar College, Palghar.

Subject: Regarding the permission to conduct Certificate Course entitled "Basic Concepts and Skills in Mathematics"

Respected Sir,

The Department of Mathematics to conduct Certificate Course entitled "Basic Concepts and Skills in Mathematics "

Objectives and Learning Outcomes -

- 1) Understanding basic concepts, formulae and different rules in different subfields of mathematics like Analysis, Linear Algebra, Abstract Algebra, Probability Theory, Discrete Mathematics, Graph Theory, Calculus and Statistics.
- 2) Become confident in using Mathematics to analyse & solve problems both in the field of their study and in real-life situations.
- 3) Develop the mathematical curiosity & use inductive & deductive reasoning when solving
- problems. 4) Have a deeper understanding of mathematical concepts & theory.
- 5) Develop the knowledge, skills & attitudes necessary to pursue further studies in
- 6) Be life-long learners who are able to expand independently their mathematical expertise
- when needed.

Duration - 40 Hours Eligibility - Degree students of Science Exam Pattern – Total evaluation will be out of 60 marks (Written Test : 40 marks & Assignments : 20 marks) Proposed Day & Date - Wednesday, 4th May, 2023

Kindly give the permission and we look forward for your kind cooperation.

Thanking You,

N

Yours sincerely, Mrs. Dipali Mali.

Saved one

Notice



Sonopant Dandekar Shikohan Mandali's Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar Esth: 14 August 1968 Dr. Kiran Save, Principal
 Kharekuran Road, Palghar (W), Tal. & Dist. Palghar,

 Maharashtra - 401 404, INDIA

 Tel. : + 91 - 2525 - 252163

 Principal : + 91 - 2525 - 252317

 Email : sdsmcollege@system.com

 Web. : www.sdsmcollege.com

Date: 17th April, 2023

NOTICE

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS

All the students of senior college (Science) are hereby informed that considering the importance of understanding our past and making prediction about the future, mathematics plays a vital role. The department of mathematics is starting a "Certificate Course in Basic Concepts and Skills in Mathematics" from 4th May, 2023.

Enrolment for the above course should be done on or before 21st April, 2023 in Department of Mathematics, common staffroom.

No fees will be charged for the course. After successful completion of the course, participants will get certificate from the college.

Aus.

Asst. Prof. Dipali Mali Head & Course Coordinator Department of Mathematics

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Prof. Mahesh Deshmukh IQAC Coordinator

Dr. Kiran Save

Sector A Contractor Arts College V.S. Apte Commerce College & IA.H. Mento Science College PALGHAR (W.R.) Dist. Palghar, Pin-461404

sest College - University of Mumbai, Amongst Top 100 Colleges in India as per India Today - MDRA Survey 2017, 2018, 2019, 2020, 2021 and 2022)

Brochure



Sonopant Dandekar Shikshan Mandali's

Sonopant Dandekar Arts, V.S. Apte Commerce & M.H. Mehta Science College Palghar, Kharekuran Rd. Palghar, Dist. Palghar,401404.



Syllabus

Department of Mathematics

<u>SYLLABUS: Certificate Course in Basic Concepts and Skills in</u> <u>Mathematics.</u>

	Contents	No. Of sessions
	 Calculus: Euclidean space Rⁿ. Formulas of differentiation and problems. Rules of Differentiation and problems. Scalar valued functions and its properties. Vector valued functions and its properties. Concept of Partial differentiation. Rules of Partial Differentiation and problems. 	7
Course Content	Algebra: • Vector Spaces Over Q, R, And C • Row Reduction • Matrix Operations • Division and Euclidean Algorithms • Unique Factorization of Polynomials • Permutations and Their Signs	5
	Topology of Metric Spaces: • Definition and Examples • Open Balls and Open Sets • Bounded Sets • Dense Sets • Limit and Cluster Points • Continuity. • Sequences and its convergence.	7
	Graph Theory: • The definition of a Graph • Seven bridges problem • Graphs as Models • Vertex Degrees • Sub graphs • Paths and Cycles	7

	 The Matrix Representation of Graphs 	
	Discrete Mathematics Counting principles of addition & multiplication Stirling number of second kind. Pascal's identity Inclusion exclusion principle Composition and signature of permutation. Recurrence relation. 	7
	Statistics Distribution of data Measures of Central Tendency (Mean ,Median and Mode) Quartiles Deciles Percentiles Standard deviation , Expectation & Variance 	7
Advisory Committee	 Dr. Kiran Save (Principal) Prof. Mahesh Deshmukh (Vice Principal, IQAC Coordinator) Dr. Tanaji pol (Vice Principal) Prof. Dipali Mali (Course coordinator, Head, Mathematics Dept.) 	
Teaching Faculties	 Prof. Dipali Mali (Course coordinator, Head, Mathematics Dept.) Prof. Shirin Memon (Assistant professor, Mathematics Dept.) Prof. Nidhi Mali (Assistant professor, Mathematics Dept.) Prof. Ishrat Gawandi (Assistant professor, Mathematics Dept.) Prof. Husnawaz Contractor (Assistant professor, Mathematics Dept.) 	

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Mrs. Dipali Mali

Dr. Tanaji Pol

(Course coordinator, Head, Mathematics Dept.) (Vice Principal)

Prof. Mahesh Deshmukh (Vice Principal & IQAC coordinator)

ant

Dr. Kiran J. Save PRINCIPAL (Principal) (S. Apta Commerce College & IA.H. Melita Science College PALGHAR (W.R.) Dist. Palghar, Pin-401404

Time Table



Sonoport Dondekar Shikshan Mondali's Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar (Bat Colege - University of Munitai) (Amongst Top 100 Coleges in India by India Today - MDRA Survey 2019)

DEPARTMENT OF MATHEMATICS

Certificate Course in Basic Concepts and Skills in Mathematics.

SR. NO.	DATE	TIME	NO. OF HOURS	TOPIC
1	4/05/2023	8.30-11.30 A.M.	3	 Euclidean space Rⁿ. Formulas of differentiation and problems. Rules of Differentiation and problems.
2	6/05/2023	8.30-11.30 A.M.	3	 Scalar valued functions and its properties. Vector valued functions and its properties. Concept of Partial differentiation. Rules of Partial Differentiation and problems.
3	8/05/2023	8.30-11.30 A.M.	3	 Rules of Partial Differentiation and problems. Vector Spaces Over Q, R, And C Row Reduction
4	9/05/2023	8.30-11.30 A.M.	3	 Matrix Operations Division and Euclidean Algorithms Unique Factorization of Polynomials Permutations and Their Signs
5	10/05/2023	8.30-11.30 A.M.	3	 Definition and Examples Open Balls and Open Sets Bounded Sets Dense Sets
6	11/05/2023	8.30-11.30 A.M.	3	 Limit and Cluster Points Continuity. Sequences and its convergence



Sonoport Dondekar Shikshan Mandali's Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar Rest College - University of Mumboil (Avongst Top 100 Colleges in India by "India Today - MDRA Survey 2019]

7	12/05/2023	8.30-11.30 A.M.	3	 Convergence of sequence. The definition of a Graph Seven bridges problem.
8	13/05/2023	8.30-11.30 A.M.	3	 Graphs as Models Tertex Degrees Subgraphs
9	15/05/2023	8.30-11.30 A.M.	3	Paths and Cycles The Matrix Representation of Graphs Counting principle of addition
10	16/05/2023	8.30-11.30 A.M.	3	 Counting principle of multiplication Stirling number of second kind. Pascal's identity
11	17/05/2023	8.30-11.30 A.M.	3	 Inclusion exclusion principle Composition and signature of permutation. Recurrence relation.
12	18/05/2023	8.30-11.30 A.M.	3	 Distribution of data Measures of Central Tendency (Mean , Median and Mode)
13	19/05/2023	8.30-1 \$.30 A.M.	2	Quartiles Deciles Percentiles
14	20/05/2023	8.30-10.30 A.M.	2	 Standard deviation ,Expectation & Variance

Student Enrollment List



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Sonopont Dandekar Shikshan Mandali's Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar (Best College - University of Mumbal) (Amongsi Top 100 Colleges in India Today - MDRA Survey 2019)

DEPARTMENT OF MATHEMATICS

Certificate Course in Basic Concepts and Skills in Mathematics, May 2023

List of students enrolled for the certificate course

SR.N o.	NAME OF THE STUDENT	Class	Contact No.	SIGNATURE
1	Dipak Devilal suthar	SYBSC	8668708564	05
2	Kiran sadya salkar	SYBSC	8262902565	Sulker
3	Luckyraj Niraj Singh	FYBSC	8488021537	Set
4	Pankaj Ramesh Yadav	FYBSC	8340 5389 54	Rept.
5	Ankit Krishnakant Tiwari	IF-92M7	8080942936/	the
6	Yadav Vivek Ramavtar	MSCIL	9518313622	Quely
7	Jay sowal Archita Shivkumar	MSCI	9168839075	This
8	ShajkhShafin A.	SYBSC	9226942606	Shefi
9	Uddhari Santosh Tamore	SYBSC	9764604291	Ar.
10	Isha Jaywant Mali	FYRSC	7263915950	Thede
11	Verma Nitish Mundrika	.FYBSE.	84 7499441191	a intrance.
12	Gaikwad Mansi Raju	FYBSC	8329551434	Man
13	Jadhav Tanishq Shiva ji	FYB.Sc	9730369022	J.g.
14	Dukale Namita subash	S.V.B.SC	8208271207	But all.
15	Chaure Sanjana Vijay	SYBisc	9714605744	Egiane.
16	Pachalkar Sonali Vasudev	S.Y. BSC	9021823727	Bachalke
17	Bhoye Premkumar Chimo.	MS(-II	9373706201	Phar
18	Vanga Sarika Santosh	MSC-I	8446250884	Fadavi
19	Khulat Aditi Ananta	msc-I	9022620633	3-160001.
20	Gavit Vijaya Pandu	msr-7	8010328287	Promit
21	Thakare Vikas Dattu	msc-7	9022981827	trugne.
22	Thorat Ashvini Kevaji	MSC-I	771190 10 80	.A.I
23	Gond Shalaka Ramesh	MSC-F	8080264351	amel
24	Telwada Mahesh Namdev	M-SC-1	18407981168	Belminda

25	Kharpade Shubham Subhash	MSCL	7387394653	Gorde
26	Varatha Sonali Gopinath	MSCI	8329796413	yaratter.
27	More Snehal Baban	MSC I	2029112266	Bonse
28	Padher Mahendra Pandurang	MSCI	9545774841	Coldres
29	Bhujada Sandesh	MSGI	7499202567	201 white
30	Khan Sadika Atikullah	F.Y.B.Sc	9021922750	Sadika
31	Patil Samruddhi Ganesh	S.Y.B.Sc	8551962354	Baty

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Mrs. Dipali Mali

(Coure Coordinator, Head, Mathematics Dept.)

Student Attendance List



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Sonopant Dandefar Shifafan Mandafi's SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE, Pulghar, Dist-Palghar, Pis-401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Attendance of students

Sr. No.	Name of student /Date	410012023 8-30-9-30	410512023 9-30-10-20	4 05 2023	610512023 8:30-9:30	6 05 2033 1.30-10.30	6105 2+13 10:30-11:30	8 05 2+23 9-30-9-30	810512023 9-J0-10-J0	8 05 2023 0-30-11-30	9 05 2013 8-30 - 9-30
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DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Sr. No.	Name of student /Date	410532023 8-10-9-30	4]05 2023 9-20-10-30	4105 2023 10-30-11-30	8-30-9-30 8-30-9-30	6 05 2+23	6 05 2003 10-30 - 11-30	8-30-9-30	5 05 3413 9:30-10:30	10-30-11-30	q 05 3013 1-30 - 1-30
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14	Namita Dukale	Cast and	Ende	Entrans	Balinaho	Attingto	Gowhale.	Mary la	Baller Lak	6m .	Gar
15	Sanjana chause	-	Stagane	-Segura-	Caginy-	Sugar	- Signal	Sague	Cancing	Calle	Deter
16	Sonali Pechalhas	Badalez	Sachalky	Sachales	Cachelle.	Sachalks.	Buchalks	Bachelles	Buchalkz	Sachalkz	Sodulke
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Somopant Dandekar Shikphan Mandali's SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE, Paighar, Diel-Paighar, Pin-401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Attendance of students

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	Name of student /Date Stindesh Bhujada Ashwini Thoreat Shalaka Gond Mahesh Telwade Shijbham khanjau Sonali Varratha Snehal More Samouddhi patil Mahendia pailbe	Name of student /Date Sindesh Bhujada Blubbe Sindesh Bhujada Blubbe Ashwimi Thoreat Bart Shalaka Gond Armil Mahesh Telwada Binuda Shubham Khanal Sonali Varatha Yuutti Snehal more Bars Samouddhi patil Fith Mahendia pailor Blubs	Name of student /Date 18/05/2+23 3/0-9/30 4/06/2013 3/0-9/30 4/06/2013 4/06/2014 5/06/2014 5/06/2	Name of student 14/05/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+23 4/20/2+3 4/22+3 4/	Name of student 14/05/2023 4/05/2023 16/05/2025 16/05/205 16/05/2025 16/05/2025 16/05/2025 16/05/2025 16/05/2025 16/05/20	Name of student 14/05/3+23 44/05/2+23 46/05/2+23 66/05/2+23 66/05/2+23 65/05/2-25/2+23 65/05/2-25/2-25/2-25/2-25/2-25/2-25/2-25/	Name of student 44 05/2+23 44 05/2+23 44 05/2+23 16/05/	Name of student 44 105/2+13 44 (21) 2023 44 107 2023 16 (05) 2023 16 (Name of student 14/05/2+23 4/06/2023 4/06/2023 6/05/2+23 6/05/2+23 6/05/2+23 8/05/2-23 8/05/2-23	Name of student 14/09/2423 4/00/2023 4/00/2023 6/05/2023 6/05/2423 6/05/2423 8/05/243 8/05/243

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Sonopant Oandeker Shikihan Mandali'z SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE, Palghar, Dist- Palghar, Pin-401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

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Sonopant Dandefar Shifafan Mandali's SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE, Palghar, Dist-Palghar, Pin-401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Sr. No.	Name of student	09\05\2023 9130-10:30	09 05 2025	10/05/3023 8:30-9130	10/05/2023	10:20-11:20	n ori2023	11 05 2023	10:30-11:30	12 05 2023	7: 50 -1012
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14	Namita Dukie	atale	Gabels	Butale	Butale	Autala	Butale	Bark	Endate	Edutale	Ethale
15	Sonali Pachalka	Redults	- Brachalte	Sachalle	Sachalts	- Sachalles	Jachelly	2 Sachalts	2 Sachalles	2 Fuchalter	& Fachulk
16	Sanjana chaure	- Childrent	Jugar	Cajant	Jaijant	Sigar	- Degan	- Soijan	- Sajun	- Organ	+ Sujual
17	Bhoy e fremkung	Bhux	Balver	Shur	Salarge	Belarge	Balver	Brown	Boher	Ashya	Belays
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No	a. Name of student /Date	4:20-10:30	9 (06) 202 3	8:30 - 9:30	9:30-10:30	10/05/2023	81.20-9:20	4:30-10:20	10:30-01:20	8:30-9:30	1120-10:30
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Sonopant Dandekar Shikukan Mandali's SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE, Palghar, Dist-Palghar, Pis-401 404.

DEPARTMENT OF MATHEMATICS CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Attendance of students

Sr.		12/05/2023	13/05/2023	13/05/2023	13/05/2023	1510512023	15 105 12023	15/05/2023	16 05 3023	16 05 2013	14102 2021
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Sonopast Dandefar Shifthan Mandail's SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE, Palghar, Diat-Palghar, Fin-401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

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12	Nitish.M. upma.	Timma	Running	a warma.	D worma	Durana.	Duarma	auma.	aurona.	a voora.	ALDANDA
13	Tanisha S. Jedha	537.	339.	139.	Jeg.	189.		182.	NA.	182	189
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Sonopant Dandefar Shifestan Mandali's SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE, Palghar, Dist-Palghar, Pin- 401 494.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Attendance of students

Sr. No.	Name of student	14/05/2023	14 05 2023	14/05/2023	18/05/2023	18/05/2023	18/05/2023	19/05/2023	14/05/2023	20/05/2023	9.0/05/302.3
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DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Attendance of students

Sr. No.	Name of student	17 05 2023	14 05 2013	174/05/200.8	18/05/2023	12 207 2023	14/05/2023	14 05 8023	14/05/2023	10/05/ \$013	20/05-2011
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15	Socali Pachalka	Scholiz.	Sochalle	- Ancheline	Sichelles	Sachalle	Adable	gachally	Indials	Sachalk	2 Subulk
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DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

Attendance of students

Sr. No.	Name of student	17/05/202.9	17/05/2023	12 25 2023	10 05 202.5	18 05 2023	15/05/2023	19/05/2023	19/05/2023	20/05/2023	20/05/2023
	/Date	8:30-4130	9:30 - 10:30	10:30-11:30	8:30-9:30	9:30-10:30	10:30 -11:30	8:30-9:30	9:30 -10:31	8:20-9:50	9:30-10:30
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25	Mabesh Telwada	Pelmede	Forland	Pelmode	Arendy	-	Pelmada	Pelquada	Planda	Relands	polinid
26	shubben kherp	de conte	osizale	Saple	Finde	State	gende	Bonde	Finde		
27	Sonali Varatha	4 autres	Voutin	Junta	Vinata,	fauth	faulte		Houtes.	bustie	Vater.
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Teachers Attendance Record





Sonopart Dandeker Shishen Hondol's Sonopart Dandeker Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar Bat College - University of Marching (Inneget by 100 College as India by Hold Notes, News, 2019)

DEPARTMENT OF MATHEMATICS

Certificate Course in Basic Concepts and Skills in Mathematics, May 2023

Teachers Attendance Record

9.	8 05 1 2023	10-30 - 11-30 AM	Subspace, Row Reduction, exemples.	Tristic
10.	9 05 2013	8:30 - 9:30 AM	matrix operations, examples.	Tathin
11.	910512023	9.30 - 10.30 AM	Division and Euclidean Algorithms,	Tusture
12.	9/05/2023	10-30-11-30 AM	promutations & their sites.	Transie
13.	10 05 2023	8.30 - 9.30 AM	Definition and Examples of Open Balls	201
14.	10 05 2023	9.30 - 10.30 AM	Open Sets and Bounded Sets	Princet
15.	10 05 2023	10.30 - 11.30 AM	Example of Bounded Sets & Dense Sets	0
16.	11/05/2023	8:30- 9:30 AM	Limit and Cluster Points	And
17.	11/05/2023	9.30-10.30 AM	Continuity definitions & Examples	Krot



DEPARTMENT OF MATHEMATICS Certificate Course in Basic Concepts and Skills in Mathematics, May 2023 <u>Teachers Attendance Record</u>

18.	11/05/2023	10.30-11.30 AM	Sequence and its convergence	30,
19.	12 05 2023	8.30-9.30 AM	Convergence of Sequence.	1 cmat
20.	12/05/2023	09:30 - 10:30AM	Basics of Graphs.	180
21.	12/05/2:023	10:30 -11:30 AM	Seven bridges problem	42
22.	13/05/2023	8:30-9:30 AM	Graphs as Models.	CRD
23.	13/05/2023	9:30 - 10:30AM	Vertex degrees	cRD
24.	13/05/2023	10:30-11:30 AM	Subgraphs.	42.
25.	15105/2023	8:30-9:30 M1	Paths & cycles.	fore
26.	15/05/2023	9:30-10:30	The matrix representation of Graphs.	1.02



dall's or Shikahan M Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar

(Best College - University of Mumbal) get Top 100 Colleges is India by India Today - MDRA Survey 2019']

DEPARTMENT OF MATHEMATICS

Certificate Course in Basic Concepts and Skills in Mathematics, May 2023

Teachers Attendance Record

27.	15 05 2023	10:30 - 11:30 am	Counting Principle of Addition	A
28.	16 05 2023	8:30 - 9:30 am	Contining Principle of Multiplication	7
29.	16 05 2023	9:30-10:30 am	Sturling Number of Second Kind	4AA
30.	16/05/2023	10;30-11:30 am	Pascal's Identity]
31.	17/05/2023	8:30 - 9:30	Inclusion - Axclusion Principle	1
32.	17/05/2023	9:30 - 10:30	Composition and signature of permutation	A
33.	17/05 2023	10:30 - 11:30 am	Recurrence Relation	
34.	18 05 2023	8.30 - 9.30 am	Distribution of Data	3 Amat
35.	18 05 2023	9-30-10-30 am	Measure of Central Tendency-Mean	JUT



Senoport Dendeker Shikshan Mondell's Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar (Best College - University of Muestical) (Aerongot Tap 100 Collegae in India by 'India Today - MDRA Sorvey 2019')

DEPARTMENT OF MATHEMATICS Certificate Course in Basic Concepts and Skills in Mathematics, May 2023

Teachers Attendance Record

36.	18 05 2023	10.30-11.30 am	Median and Mode	Amot :
37.	19 05 2023	8:30-9:30 am	Quardiles)
38.	19/05/2023	9:30 - 10: 30 am	Deciles	1.1A
39.	19/05/2023	10:30 -11:30 cm	Percentiles	
40.	2010512023	8:30 - 10:30 AM	Standard deviation and Vordance	L.M.J.

Question Paper for Exam



Sonopant Dandekar Stikkston Mandali's Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar Best College - Usivenity of Muetol Amongu Top 100 Colleges in India by India Today - MORA Survey 2019]

(Academic Year 2022-23)

Department of Mathematics

CERTIFICATE COURSE IN BASIC CONCEPTS AND SKILLS IN MATHEMATICS.

DAT	E: - 22/05/2023	TIME: - 2 Hours (9:00 am to 11:00 am)	MAX	(MARKS: - 60	
Not	te: - (1) All Section	ns are Compulsory.		· .	

- (2) There are Total 6 Sections every section has 3 question.
- (3) Every Section is having 10 marks.
- (4) Attempt any 2 question from each section.

Section I - Calculus

- 1. Differentiate $f(x) = x^{1001} + 5x^3 6x + 10,687$ with respect to x.
- 2. Find gradient of the function $f(x, y, z) = \sin x e^{y} \ln(z)$

3. What is the speed that a vehicle is travelling according to the equation $d(t) = 2 - 3t^2$ at the fifth second of its journey? In this instance space is measured in meters and time in seconds.

Section II- Algebra

 Solve the following system of equation using row reduction method x+y-z=1, x+2y=0, x+3y+2z=0 where x, y, z are real numbers.

2. Find 3A+2B, where
$$A = \begin{bmatrix} 1 & -2 & 0 \\ 0 & -1 & 2 \\ 4 & 3 & -6 \end{bmatrix}$$
 and
$$B = \begin{bmatrix} -1 & 2 & 1 \\ 0 & -3 & 2 \\ 0 & 1 & -4 \end{bmatrix}$$

3. For the polynomials $p(x) = x^2 + x + 5$ and g(x) = x + 2, then find the value of q(x) and r(x).

Section III - Topology of Metric Spaces

- 1. Define the following terms:
 - (i) Metric Spaces

(ii) Open Ball & Open Set

- 2. d: $\mathbb{R} \times \mathbb{R} \to \mathbb{R}$ defined as d(x, y) = |x y|. Then d is a metric on \mathbb{R} and d is called the usual metric on \mathbb{R} .
- 3. Prove that every function $f: (\mathbb{N}, d) \rightarrow (Y, d')$ where d is the usual metric and (Y, d') is any metric space is continuous.

Section IV -Graph Theory

- 1. Define Simple, Regular and Complete Graph. Give examples.
- 2. Draw the following graphs, or explain they cannot exists:
 - (i) a graph with an isolated vertex and a universal vertex.
 - (ii) a bipartite graph of order 5 and size 7.
 - (iii) a bipartite graph of order 8 and size 10.
- 3. Find adjacency and incidence matrix of the following graphs:





Section V - Discrete Mathematics

- 1. There are 73 students in the first year Humanities class at the University of California Among the first year Humanities class at the University of California. Among them a total of 52 can play the piano, 25 can play the violin, 12 can play piano and flute, and 7 can play violin and flute, but only one student can play all three instruments. How many in the class cannot play any of them?

Æ

2. Find the first 5 terms of the following recurrence relation? $a_1 = 2, a_2 = -1, a_n = 2a_{n-1} - a_{n-2}$ for $n \ge 3$

3. Find signatures of the following permutations

(i)
$$\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 3 & 2 & 4 & 1 \end{pmatrix}$$
 (ii) $\beta = (3,5,6)(5,2) \in S_6$

Section VI - Statistics

1. Find the mode for the following data:

Income in	2000-	4000-	6000-	8000-	10000-
Rs.	4000	6000	8000	10000	
No. of Persons	16	34	60	37	13

2. Find the variance and standard deviation of the following data:

Size of shoe	7	8	9	10	11	
No. of persons	5	10	20	10	5	

3. Find the Q1 & Q2 quartiles for the following data:

Class Interval	45-50	50-55	55-60	60-65	65-70	70-75
Frequency	2	8	20	25	10	5

Exam Attendance Sheet



Sonopant Dendeker Shikshen Mandeli's Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar Best Colege-Usivenity of Mumbail (Amongst Top 100 Colleges is India by India Today - MDRA Sorvey 2019)

Certificate Course in Basic Concepts and Skills in Mathematics, May 2023

Date :- 22/05/2023

SR. No.	ROLL NO	Class	NAME OF THE STUDENT	SIGNATURE
1	25052	SYPRE	Dipak Devilal suthar	Ola
2	25070	SYBIC	Kiran sadya salkar	Saller
3	90225	F.Y.B.Sc	Luckyraj Niraj Singh	Sas
4	90213	FYBSC .	Pankaj Ramesh Yadav	Ackel .
5	18017	TT-9201	Ankit Krishnakant Tiwari	Auh!
6	18007	MSCI	Yadav Vivek Ramavtar	Sivekel
7	18015	MSC#	Jaysewal Archita Shivkumar	An
8	2364	SYBSC	ShqikhShafin A.	Shop
9	25101	SYBSC	Uddhari Santosh Tamore	ans.
10	90042	FYBSC	Isha Jaywant Mali	Pouli
11	90085	FYBJG	Verma Nitish Mundrika	Q with
12	2095	FYBSC	Gaikwad Mansi Raju	Manst
13	90192	FYB.S.	Jadhav Tanishq Shiva ji	119
14	25053	SYBSC	Dukale Namita subash	ADDIL alo.
15	25111	SYBSC	Chaure Sanjana Vijay	Bijan
16	2363	SYBSC	Pachalkar Sonali Vasudev	Sachalks.
17	18001	MSG-II	Bhoye Premkumar Chipro	Rebour
18	17001	MSC-I	Vanga Sarika Santosh	Redavi
19	17002	MSK-I	Khulat Aditi Ananta	31/24mm

Attendance Sheet

20	17004	MSC-I	Gavit Vijaya Pandu	Bauit
21	17005	MASC-I	Thakare Vikas Dattu	there
22	17008	MSC-I	Thorat Ashvini Kevaji	(A)
23	17014	MS(-T	Gond Shalaka Ramesh	dama
24	17016	M.SC.I	Telwada Mahesh Namdev	Referreda
25	17018	M.SC.I	Kharpade Shubham Subhash	Bande
26	17012	MSC-I	Varatha Sonali Gopinath	Hawitta
27	17013	MSC-I	More Snehal Baban	Some.
28	17011	MSC-I	Padher Mahendra Pandurang	Bilhee
29	14004	Msc-I	Bhujada Sandesh	Aluesater
30	90080	F.Y.B.SC	Khan Sadika Atikullah	Badika
31	2376	S.Y.B.Sc	Patil Samruddhi Genesh	Satil

TOTAL STUDENTS PRESENT :- 31 TOTAL STUDENTS ABSENT :- 60

SIGNATURE INTERNAL EXAMINER SIGN:-

05/23

12)

SIGNATURE HEAD OF DEPARTMENT



Certificate

	Principal	IQAC Co-ordinator	HOD, Dept. of Mathematics
	Dr. Kiran Save	Prof. Mahesh Deshmukh	Prof. Dipali Mali
	Adams	moshmukh	Anna.
		,	and secured <u>A</u> grade.
Mathematics"	mcepts and skills in P mic year 2022-23	of Mathematics during the acade	conducted by Department
		opant Dandekar College	of <u>FYBSC</u> class of So
		Manei Raju	Mr/Ms. Gaikwad
			This is to acknowledge that
matics"	And Skills In Mather	te Course In Basic Concepts .	"Certifica
		NCE & INNOVATION	CENTER FOR EXCELLING DEPARTMENT OF MATHE
OF COMPLETION	survey (0 colleges as per India Today Nation wise Jllege by University of Mumbai	Amongst top 15 Awarded Best C
		dekar Shikshan Mandali's Idekar Arts, V.S. Apte Commerce Nta Science College, Palghar versity of Mumbai)	Sonopant Dan Sonopant Dan and M.H. Me (Affiliated to Un

Report

Graduates of the certificate course in Basic Concepts and Skills in Mathematics have acquired a comprehensive understanding of foundational mathematical concepts and their applications across diverse fields. They are equipped with analytical and problem-solving skills essential for both academic pursuits and practical applications in various professional domains. Learners gained proficiency in foundational mathematics, practical problem-solving capabilities, and the readiness to pursue further studies or apply their skills in various professional contexts. Thirty one students completed this course.

Duration: 40 Hours. Format: Lectures, Discussion, Case studies, Tests. Date of Commencement: 02-05-2023 Date of Completion: 22-05-2023 No. of Student Passed: 31

Prus.

Asst. Prof. Dipali Mali Head of Department of Mathematics