ॐ

SASURIE COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai

Near NH544, Coimbatore Bypass, Near Vijayamangalam Tollgate,Tirupur 638056

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION - 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

SASURIE COLLEGE OF ENGINEERING

Criterion 1	Curricular Aspects	100

1.1 Curricular Planning and Implementation (20)

1.1.1The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of continuous internal Assessment

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S.No	Description
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SASURIE INSTITUTIONS

SASURIE
College of Engineering
Vijayamangalam, Tirupur

Department : N. Kavithamani.
Subject Code & Name : MA3151
Class & Batch : B.E CSE
Semester : I

S.NO	CONTENTS – COURSE FILE PARTICULARS	REMARKS
1	Time Table	✓
2	Student name list	✓
3	Subject Information Record	✓
4	Syllabus	✓
5	Lesson Plan	✓
6	Test Plan for the Subject	✓
7	Result Analysis	✓
8	Corrective Action Report	✓
9	Quality objective monitoring record	✓
10	Internal test mark sheet(Consolidated)	✓
11	Internal test question paper	✓
12	Model question paper	✓
13	Sample Answer paper for all test(Min-3)	✓
14	Content beyond the syllabus	
15	Tutorial Class – schedule and content	Soft copy
16	Assignment – schedule and paper	✓
17	PPT - handout	Soft copy
18	Video - Animation - Soft copy	Soft copy
19	Question bank	Soft copy
20	Sample university question papers(min 5 QP-recent exam)	Soft copy
21	Personal Log book – Updated	
22	Lecture Note	Soft copy
23	Special Class if any, Approval letter, Schedule, content covered.	Soft copy

	Prepared By	Approved By
Sign:	N. Kavithamani	M.Vijay
Name:	N. Kavithamani	Dr.M.VIJAYAKUMAR ME., Ph.D., PRINCIPAL
	Faculty	HOD

SASURIE COLLEGE OF ENGINEERING
Vijayamangalam - 638 056, Tirupur (Dt)

SASURIE INSTITUTIONS

SASURIE College of Engineering
Vijayamangalam, Tirupur

CLASS TIME TABLE

Department : Science and Humanities

Semester : I

ACADEMIC YEAR : 2022-2023 (ODD)

CLASS: I CSE

HOUR		I	II		III	IV		V	VI		VII	VIII
DAY/ TIME		9.30 TO 10.15	10.15 TO 11.00	11.00 TO 11.10	11.10 TO 11.55	11.55TO 12.40 p.m.	12.40 p.m. TO 1.20 p.m.	1.20 TO 2.05	2.05 TO 2.50	2.50 TO 3.00	3.00 TO 3.45	3.45 TO 4.30 PM
MONDAY				BREAK	MAT	MAT	LUNCH			BREAK		
TUESDAY					MAT			MAT				
WEDNESDAY		MAT (T)	MAT (T)									
THURSDAY						MAT						
FRIDAY									MAT			
SATURDAY						MAT						

S.No	Subject Code	Name of the Subject	Abbreviation	Name of the Staff & Dept.	No of hours
1	MA3151	Matrices and Calculus	MAT		9
				Total	9

	Prepared by	Verified by	Authorized by
Sig...	N. Kavitha	M. Bala	
	TIME TABLE I/C	HOD	PRINCIPAL

Dr. G. VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

Academic Year – 2021 -2022 ODD SEMESTER

STUDENTS NAME LIST

Department : CSE **Year : I**

S.NO	Register Number	Name of the Student	H/D
1	22CS001	Abishek J	
2	22CS002	Akileshkumar S	
3	22CS003	Arun V	
4	22CS004	Arunkumar A	
5	22CS005	Aswin S	
6	22CS006	Basharath mahamood S	
7	22CS007	Baskar S	
8	22CS008	Deepak v	
9	22CS009	Deepakraj R	
10	22CS010	Dharshini R	
11	22CS011	Dharun T	
12	22CS012	Eswarprabhu S	
13	22CS013	Farhath A	
14	22CS014	Guhan K R	
15	22CS015	Guruprasad R	
16	22CS016	Harijeeva M	
17	22CS017	Harikrishnan B	
18	22CS018	Haripriya V	
19	22CS019	Irudhaya vishva A	
20	22CS020	Jeena D	
21	22CS021	Jeeva S	
22	22CS022	Jeeva S	
23	22CS023	Kalaiselvan R	
24	22CS024	Karthika K	
25	22CS025	Keerthika S	
26	22CS026	Logeswaran K	
27	22CS027	Maheswari T	
28	22CS028	Mathavan C	
29	22CS029	Mohammed thamimul ansari C J	
30	22CS030	Nandhini M R	
31	22CS031	Navaneethakrishnan M	
32	22CS032	Naveena M	
33	22CS033	Naveenkumar V	

Dr.M.VIJAYAKUMAR ME.,
SASURIE COLLEGE OF ENGINEERI
Vijayamangalam - 638 056, Tirupur (D

34	22CS034	Pandi E	
35	22CS035	Revathi.P	
36	22CS036	Sabariyanandhan T	
37	22CS037	Saran B	
38	22CS038	Saravanan R	
39	22CS039	Selvapriya C	
40	22CS040	Shanmathi C T	
41	22CS041	Sikkanthar bathusha R	
42	22CS042	Sriraj S	
43	22CS043	Subash M	
44	22CS044	Swathi R	
45	22CS045	Thirupathi P	
46	22CS046	Vasanth A	
47	22CS047	Vasanthakumar P	

	Prepared By	Verified By	Approved By
Sign:	N. K		
Name:	N. Kavitharani.		
	Faculty	HoD	Principal

Dr.M.VIJAYAKUMAR M.E., Ph.D.,
PRINCIPAL
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Vijayamangalam - 638 056, Tirupur (Dt).

MA3151

MATRICES AND CALCULUS

L	T	P	C
3	1	0	4

COURSE OBJECTIVES:

- To develop the use of matrix algebra techniques that is needed by engineers for practical applications.
- To familiarize the students with differential calculus.
- To familiarize the student with functions of several variables. This is needed in many branches of engineering.
- To make the students understand various techniques of integration.
- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications.

UNIT - I MATRICES 9 + 3

Eigenvalues and Eigenvectors of a real matrix – Characteristic equation – Properties of Eigenvalues and Eigenvectors – Cayley - Hamilton theorem – Diagonalization of matrices by orthogonal transformation. – Reduction of a quadratic form to canonical form by orthogonal transformation – Nature of quadratic forms – Applications: Stretching of an elastic membrane.

UNIT - II DIFFERENTIAL CALCULUS 9 + 3

Representation of functions - Limit of a function - Continuity - Derivatives - Differentiation rules (sum, product, quotient, chain rules) - Implicit differentiation - Logarithmic differentiation - Applications : Maxima and Minima of functions of one variable.

UNIT - III FUNCTIONS OF SEVERAL VARIABLES 9 + 3

Partial differentiation – Homogeneous functions and Euler's theorem – Total derivative – Change of variables – Jacobians – Partial differentiation of implicit functions – Taylor's series for functions of two variables – Applications : Maxima and minima of functions of two variables and Lagrange's method of undetermined multipliers.

UNIT - IV INTEGRAL CALCULUS 9 + 3

Definite and Indefinite integrals - Substitution rule - Techniques of Integration: Integration by parts, Trigonometric integrals, Trigonometric substitutions, Integration of rational functions by partial fraction, Integration of irrational functions - Improper integrals - Applications: Hydrostatic force and pressure, moments and centres of mass.

UNIT - V MULTIPLE INTEGRALS 9 + 3

Double integrals – Change of order of integration – Double integrals in polar coordinates – Area enclosed by plane curves – Triple integrals – Volume of solids – Change of variables in double and triple integrals – Applications: Moments and centres of mass, moment of inertia.

TOTAL: 60 PERIODS

COURSE OUTCOMES:

At the end of the course the students will be able to

- Use the matrix algebra methods for solving practical problems.
- Apply differential calculus tools in solving various application problems.
- Able to use differential calculus ideas on several variable functions.
- Apply different methods of integration in solving practical problems.
- Apply multiple integral ideas in solving areas, volumes and other practical problems.

TEXT BOOKS:

1. Kreyszig.E, "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2016.
2. Grewal.B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44th Edition, 2018.
3. James Stewart "Calculus: Early Transcendentals", Cengage Learning, 8th Edition, New Delhi, 2015. [For Units II & IV - Sections 1.1, 2.2, 2.3, 2.5, 2.7 (Tangents problems only), 2.8, 3.1 to 3.6, 3.11, 4.1, 4.3, 5.1 (Area problems only), 5.2, 5.3, 5.4 (excluding net change theorem), 5.5, 7.1 - 7.4 and 7.8].

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Vijayamangalam, Tirupur

SUBJECT INFORMATION RECORD

Department	: Computer Science And Engineering
Subject	: Matrices And Calculus.
Year	: I
Semester	: I
Last year handled by	: M. Sathya
Percentage of Result (last year)	: 50 %.
Quality Objectives	: To produce result morethan 80%. in university Exam.
Reference Book	: 1. Dr. G. Balaji, " Matrices And Calculus". 2. Dr. M. Chandrasekar, " Matrices And Calculus"

	Prepared By	Approved By
Sign:	N. [illegible]	[illegible] 10/1/2015
Name:	N. Kavitharani.	
	Faculty	HD

Dr.M.VIJAYAKUMAR ME., PH.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING
Vijayamangalam - 638 056. Tirupur (Dt)

LESSON PLAN

Faculty Name :
Department : MATHEMATICS(S&H)
Subject / Code : MATRICES AND CALCULUS/ MA3151
Academic Year 2022-2023

Designation: Assistant Professor
Semester/ Year: I /I

S.No.	Proposed Date	Proposed Period	Details of Topic Covered	TA	Ref.	Actual Date	Actual Period	Remarks
			UNIT-I - MATRICES					
1	24.11.22	4	Eigenvalues and Eigenvectors of a real matrix	1	1	25.11.22	6	2
2	28.11.22	4	Eigenvalues and Eigenvectors of a real matrix	1	1	28.11.22	4	
3	29.11.22	2	Properties of Eigenvalues and Eigenvectors	1	1	30.11.22	1	
4	1.12.22	4	Properties of Eigenvalues and Eigenvectors	1	1	1.12.22	1	
5	1.12.22	7	Cayley - Hamilton theorem	1	1	1.12.22	8	
6	1.12.22	8	Cayley - Hamilton theorem	1	1	3.12.22	4	
7	2.12.22	6	Diagonalization of matrices by orthogonal transformation	1	2	5.12.22	3	
8	5.12.22	4	Diagonalization of matrices by orthogonal transformation	1	2	5.12.22	4	
9	6.12.22	7	Reduction of a quadratic form to canonical form by orthogonal transformation	1	2	6.12.22	7	
10	6.12.22	8	Reduction of a quadratic form to canonical form by orthogonal transformation	1	2	6.12.22	8	
11	7.12.22	2	Nature of quadratic forms	1	2	9.12.22	6	
12	10.12.22	4	Applications: Stretching of an elastic [illegible] tone	1	2	13.12.22	3	
			UNIT II - DIFFERENTIAL CALCULUS					
13	12.12.22	4	Representation of functions	1	2	14.12.22	2	9
14	13.12.22	5	Limit of a function	1	2	15.12.22	4	
15	14.12.22	2	Limit of a function	1	2	16.12.22	4	
16	16.12.22	6	Continuity	1	2	17.12.22	6	
17	17.12.22	4	Continuity	1	3	19.12.22	6	
18	19.12.22	4	Derivatives	1	3	21.12.22	1	
19	21.12.22	2	Differentiation rules	1	3	20.12.22	4	
20	22.12.22	4	Differentiation rules	1	3	23.12.22	6	
21	23.12.22	6	Implicit differentiation, Logarithmic differentiation	1	3	26.12.22	4	
22	26.12.22	4	Implicit differentiation, Logarithmic differentiation	1	3	27.12.22	5	
23	30.12.22	4	Maxima and Minima of functions of one variable	1	3	28.12.22	1	
24	31.12.22	4	Maxima and Minima of functions of one variable	1	3	28.12.22	2	

SASURIE College of Engineering

LESSON PLAN

Faculty Name : N. Kavithamani
Designation: Assistant Professor
Department : MATHEMATICS(S&H)
Semester/ Year: I / I
Subject / Code : MATRICES AND CALCULUS/ MA3151
Academic Year 2022-2023

S.No.	Proposed Date	Proposed Period	Details of Topic Covered	TA	Ref.	Actual Date	Actual Period	Remark
UNIT III - FUNCTIONS OF SEVERAL VARIABLES								
25	2.1.23	4	Partial differentiation	1	4	3.1.23	4	
26	3.1.23	3	Homogeneous functions and Euler's theorem	1	4	4.1.23	1	
27	4.1.23	4	Total derivative	1	4	4.1.23	2	
28	5.1.23	4	Change of variables	1	4	5.1.23	5	
29	6.1.23	6	Jacobians	1	4	6.1.23	7	
30	6.1.23	8	Jacobians	1	4	7.1.23	2	
31	7.1.23	4	Partial differentiation of implicit functions	1	4	7.1.23	5	
32	7.1.23	4	Partial differentiation of implicit functions	1	5	7.1.23	6	
33	9.1.23	3	Taylor's series for functions of two variables	1	5	9.1.23	5	
34	9.1.23	4	Maxima and minima of functions of two variables	1	5	9.1.23	6	
35	9.1.23	4	Maxima and minima of functions of two variables			9.1.23	6	
36	10.1.23	3	Lagrange's method of undetermined multipliers	1	5	10.1.23	4	
UNIT IV - INTEGRAL CALCULUS								
37	14.1.23	4	Definite and Indefinite integrals	1	2	19.1.23	8	
38	18.1.23	1	Definite and Indefinite integrals	1	2	25.1.23	3	
39	19.1.23	4	Substitution rule	1	2	25.1.23	4	
40	20.1.23	6	Integration by parts	1	2	27.1.23	6	
41	21.1.23	4	Trigonometric integrals	1	2	27.1.23	8	
42	23.1.23	4	Trigonometric substitutions	1	2	28.1.23	7	
43	24.1.23	3	Integration of rational functions by partial fraction, Integration of irrational functions	1	5	30.1.23	4	
44	25.1.23	2	Integration of rational functions by partial fraction, Integration of irrational functions	1	5	2.2.23	6	
45	10.2.23	6	Integration of rational functions by partial fraction, Integration of irrational functions	1	5	6.2.23	6	
46	11.2.23	6	Integration of rational functions by partial fraction, Integration of irrational functions	1	5	9.2.23	5	
47	11.2.23	4	Improper integrals	1	5	15.2.23	4	
48	18.2.23	5	Improper integrals	1	5	20.2.23	6	

H. Sign 6/1/2023

H. Sign 19/1/2023

DR. M. VIJAYALAKSHMI ME., PhD
PROFESSOR & HEAD OF ENGINEERING
SASURIE COLLEGE OF ENGINEERING
Vijayamangalam, Tirupur (Dt)

LESSON PLAN

Faculty Name : N. Kavitharani. Designation: Assistant Professor

Department : MATHEMATICS(S&H) Semester/ Year: I / I

Subject / Code : MATRICES AND CALCULUS/ MA3151

Academic Year 2022-2023

S.No.	Proposed Date	Proposed Period	Details of Topic Covered	TA	Ref.	Actual Date	Actual Period	Remarks
			UNIT V - MULTIPLE INTEGRALS					
49	15.2.23	2	Double integrals	1	1	1.3.23	2	
50	16.2.23	4	Double integrals	1	1	1.3.23	8	
51	20.2.23	4	Change of order of integration	1	1	23.23	7	
52	21.2.23	2	Change of order of integration	1	1	3.3.23	8	
53	24.2.23	6	Double integrals in polar coordinates	1	1	1.3.23	3	
54	27.2.23	4	Double integrals in polar coordinates	1	2	4.3.23	4	
55	28.2.23	2	Area enclosed by plane curves	1	2	5.3.23	6	
56	1.3.23	2	Triple integrals	1	2	6.3.23	7	
57	2.3.23	5	Volume of solids	1	5	6.3.23	8	
58	3.3.23	6	Change of variables in double and triple integrals	1	5	8.3.23	3	
59	4.3.23	4	Change of variables in double and triple integrals	1	5	8.3.23	4	
60	6.3.23	4	Moments and centres of mass, moment of inertia	1	5	10.3.23	6	

15/12/22

Reference books (Ref):

1 Anton. H, Bivens. I and Davis. S, "Calculus", Wiley, 10th Edition, 2016

2 Bali. N., Goyal. M. and Watkins. C., "Advanced Engineering Mathematics", Firewall Media (An imprint of Lakshmi Publications Pvt., Ltd.,), New Delhi, 7th Edition, 2009.

3 Jain . R.K. and Iyengar. S.R.K., "Advanced Engineering Mathematics", Narosa Publications, New Delhi, 5th Edition, 2016

4 Grewal.B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44th Edition , 2018

5 Kreyszig.E, "Advanced Engineering Mathematics", John Wiley and Sons,Kreyszig.E, "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2016.

Teaching Aids (TA):

1 Black Board with Chalk

2 Overhead Projector

3 LCD Projector

Dr.M.VIJAYAKUMAR M.E., Ph.D.
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	Prepared by	Verified by	Authorized by
Sign:	N. Kavi	M.	
	Faculty	HOD	Principal

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SASURIE
College of Engineering
Vijayamangalam, Tirupur.

TEST PLAN FOR SUBJECT

Subject : MA3151 & Matrices & Calculus

Faculty : N. Kavithamani.

Semester : I

Year: 2022 - 23

Department : CSE

S. No.	Description	Planned Date/Month	Actual Conducted Date / Month	Remarks
1.	unit test - I	19 - 12 - 22	19 - 12 - 22	—
2	unit test - II	2 - 1 - 23	2 - 1 - 23	—
3.	unit test - III	23 . 1 . 23	23 . 1 . 23	—
4.	unit test - IV	6 . 3 . 23	6 . 3 . 23	—

	Prepared By	Approved By
Sign:	N. Kali	M. 6/3/2023
Name:	N. Kavithamani.	
	Faculty	HD

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Vijayamangalam - 638 056, Tirupur (Dt)

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RESULT ANALYSIS OF TEST

Subject : MA3151 & Matrices And Calculus Date : 19-12-22

Class : I Department : AE & DS

Semester : I

Exam details & date : Unit test - I [9-12-22]

Faculty : N. Kavithamani.

Number of students : 47

No. of students attended : 44

No. of students absent : 3

No. of students passed : 12

No. of students failed : 26

Percentage of failures : 66 %.

RESULT DATA:

Marks	0-25	26-50	51-75	76-90	91-100
No. of Students	10	21	11	1	0

	Prepared By	Approved By
Sign:	N. Kavi	H. 19/12/22
Name:	N. Kavithamani.	
	Faculty	HD

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Vijayamangalam, Tirupur

RESULT ANALYSIS OF TEST

Subject : MA3161 & Matrices And Calculus Date : 21/1/23

Class : I Department : AI & DS

Semester : I

Exam details & date : unit test - II [21/1/23]

Faculty : N. Kavitharani.

Number of students : 47

No. of students attended : 43

No. of students absent : 4

No. of students passed : 17

No. of students failed : 20

Percentage of failures : 47.

RESULT DATA:

Marks	0-25	26-50	51-75	76-90	91-100
No. of Students	8	14	15	3	1

	Prepared By	Approved By
Sign:	N. Kav	21/1/2023
Name:	N. Kavitharani.	
	Faculty	HD

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PRINCIPAL
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College of Engineering
Vijayamangalam, Tirupur.

RESULT ANALYSIS OF TEST

Subject : MA3151 & Matrices And Calculus. Date : 23/1/23

Class : I Department : AI & DS

Semester : I

Exam details & date : unit test - III [23/1/23]

Faculty : N. Kavithamani.

Number of students : 47

No. of students attended : 46

No. of students absent : 1

No. of students passed : 14

No. of students failed : 22

Percentage of failures : 59.

RESULT DATA:

Marks	0-25	26-50	51-75	76-90	91-100
No. of Students	6	16	13	3	2

	Prepared By	Approved By
Sign:	N. Kavi	M. 23/1/2023
Name:	N. Kavitha mani.	
	Faculty	HD

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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SASURIE INSTITUTIONS

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Vijayamangalam, Tirupur

QUALITY OBJECTIVE MONITORING RECORD

Department : CSE

Year : II

Semester : III

Subject : MA3151 & Matrices And Calculus

S.No	Quality Objective	Internal Test-I		Internal Test-II		Model exam	
		Expecting result	Obtained result	Expecting result	Obtained result	Expecting Result	Obtained result
1	To develop the use of matrix algebra techniques that is needed by engineers for practical application.	75%	28%	80%	43%	85%	57%

	Prepared By	Approved By
Sign:	N. Kavitha	
Name:	N. Kavithamani	
	Faculty	HOD

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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Internal Assessment Exam - I			Date/Session	19.12.2022/FN	Marks	50
Course code	MA3151	Course Title	MATRICES AND CALCULUS			
Regulation	2021	Duration	1.30 Hours	Academic Year	2022-2023	
Year	I	Semester	I	Department	COMMON TO ALL BRANCH	

COURSE OUTCOMES

CO1:	Use the matrix algebra methods for solving practical problems.
CO2:	Apply differential calculus tools in solving various application problems.
CO3:	Able to use differential calculus ideas on several variable functions.
O4:	Apply different methods of integration in solving practical problems.
CO5:	Apply multiple integral ideas in solving areas, volumes and other practical problems.

Q.No.	Question	CO	BTS
	PART A (Answer all the Questions10 x 2 = 20 Marks)		
1	Define Cayley Hamilton theorem	CO1	R
2	Find the characteristic equation of the matrix $\begin{bmatrix}12\\02\end{bmatrix}$	CO1	R
3	Find the sum and product of eigen values of the matrix $\begin{pmatrix}-1 & 1 & 1\\1 & -1 & 1\\1 & 1 & -1\end{pmatrix}$	CO1	R
4	Find the eigen values of $\begin{pmatrix}1 & 4\\2 & 3\end{pmatrix}$	CO1	R
5	If 3 & 15 are the eigenvalues of A = $\begin{pmatrix}8 & -6 & 2\\-6 & 7 & -4\\2 & -4 & 3\end{pmatrix}$, find det A using eigen values.	CO1	A
6	If 2,-1,-3 are the eigenvalues of the matrix A, then find the eigenvalues of the matrix A^2 -2I.	CO1	A
7	Two eigenvalues of the A = $\begin{pmatrix}3 & -1 & 1\\-1 & 5 & -1\\1 & -1 & 3\end{pmatrix}$ are 3 & 6. Find the eigen alues of A^{-1}.	CO1	U
8	Write the matrix of the quadratic form $2x_1^2-2x_2^2+4x_3^2+2x_1x_2-6x_1x_3+6x_2x_3$.	CO1	A
9	Determine the nature of the following quadratic form $f(x,y,z) = x^2+2y^2$	CO1	E
10	Find the rank, index & signature of the quadratic form $x_1^2-2x_2^2+x_3^2$	CO1	R

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	PART B (Answer all the Questions 2 x 15 = 30 Marks)		
11a	i)Find the eigenvalues and eigenvectors of the matrix $\begin{pmatrix} 11 & -4 & -7 \\ 7 & -2 & -5 \\ 10 & -4 & -6 \end{pmatrix}$ (7)	CO1	R
	(ii)Verify cayley-Hamilton theorem of a matrix $\begin{pmatrix} 2 & -1 & 2 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$ (8)	CO1	A
	OR		
11b	Verify cayley-Hamilton theorem of a matrix A = $\begin{pmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{pmatrix}$ and find the values of the matrices given by $f(A)=A^8-5A^7+7A^6-3A^5+8A^2-2A+I$.	CO1	A
12a	Reduce the quadratie form $Q = 6x+3y+3z^2-4xy-2yz+4zx$ into canonical form through orthogonal transformation	CO1	U
	OR		
12b	Reduce the quadratic form $Q = x^2+y^2+z^2-2xy-2yz-2zx$ into canonical form through orthogonal transformation.	CO1	U

D. Kavitha 18/12/22

Course Faculty

(Name /Sign / Date)

(N. KAVITHAMANI)

M. Sathya 18/12/2022

HoD

(Name /Sign / Date)

[M. Sathya]

18-12-22

Principal

(Name /Sign / Date)

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Internal Assessment Test Answer Book

Name	A. Irudhaya Vishwa			Year/ Semester/Section	I / II / A
Register Number	7382221040l9	Date/Session	19.12.22/FN	Department	CSE
Course code	MA3151	Course Title	Matrix and Calculus		
Internal Assessment Test	IAT 1 ☑	IAT 2 ☐	IAT 3 ☐	Model ☐	
Name and Signature of the Invigilator with date	P. Sivaranjani (Sivaranjani. P)				

Instruction to the Student: Put tick mark to the question attended in the column against question.

Part A			Part B/ Part C					Total Marks
Q. No.	✓	Marks	Q. NO.	✓	a Marks	✓	b Marks	
1	✓	2	11	✓	7, 7			14
2	✓	2	12	✓	10			10
3	✓	2	13		—			—
4	✓	2	14		—			—
5	✓	2	15		—			—
6	✓	2	16		—			—
7	✓	2	Grand Total					24
8	✓	2						
9	✓	2						
10	✓	2						
Total		20	44 Grand Total					

D. Kavi 19/12/22
(N. Kavithamani)
Name and Signature of the Examiner with date

To be filled by the examiner

Course Outcomes	1	2	3	4	5	6	Total
Marks allotted	20	30	-	-	-	-	50
Marks Obtained	20	24	-	-	-	-	44

IQAC Audit - Remarks

Marks Verified

M. Sathya
[M. Sathya]
Name and Signature of the IQAC member

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DEPARTMENT OF SCIENCE AND HUMANITIES

Assignment Question Paper

Assignment -1			Date of Issue:	25.01.2023	Marks	10
Course code	MA3151	Course Title	MATRICES AND CALCULUS			
Year	I	Semester	I	Date of Submission:	04.02.2023	

Q.No	Questions	CO
1.	Show that the matrix $\begin{pmatrix} 1 & -2 \\ 2 & 1 \end{pmatrix}$ satisfies its characteristic equation.	CO1
2.	Use cauley-Hamilton to find the value of the matrix is given by $f(A) = A^8 - 5A^7 + 7A^6 - 3A^5 + A^4 - 5A^3 + 8A^2 - 2A + I$	CO1
3.	To find the eigen value and eigen vectors of the matrix $\begin{pmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{pmatrix}$.	CO1
4	Reduce the quadratic form $Q = 6x^2+3y^2+3z^2-4xy-2yz+4zx$ into canonical form by an orthogonal transformation.	CO1

D. Kavitha

Name and Signature of the Faculty Incharge

(N. KAVITHA-AP/MA-IV)

HoD/S&H

[M. Sathya]

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DEPARTMENT OF SCIENCE AND HUMANITIES

Assignment Answer Sheet

Name of the Student : S. Bashrath Mahmood

AU Register Number: 732422104006

Assignment -1			Date of Issue:	25.01.2023	Marks	10
Course code	MA3151	Course	MATRICES AND CALCULUS			
Year	I	Semester	I	Date of Submission:	04.02.2023	

Q.No	Questions	CO
1.	Show that the matrix $\begin{pmatrix} 1 & -2 \\ 2 & 1 \end{pmatrix}$ satisfies its characteristic equation.	CO1
2.	Use cauley-Hamilton to find the value of the matrix is given by $f(A) = A^8 - 5A^7 + 7A^6 - 3A^5 + A^4 - 5A^3 + 8A^2 - 2A + I$	CO1
3.	To find the eigen value and eigen vectors of the matrix $\begin{pmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{pmatrix}$.	CO1
4	Reduce the quadratic form $Q = 6x^2+3y^2+3z^2-4xy-2yz+4zx$ into canonical form by an orthogonal transformation.	CO1

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Content Quality	6	4
Presentation Quality	2	2
Timely submission	2	2
Total marks	10	08

N. Kavitha (N. KAVITHAMANI)
Name and Signature of the Faculty Incharge

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DEPARTMENT OF SCIENCE AND HUMANITIES

Tutorial Question Paper

Tutorial – 01			Date of Issue:	08.12.2022	Marks	10
Course code	MA3151	Course Title	MATRICES AND CALCULUS			
Year	I	Semester	I	Date of Submission:		17.12.2022

Q. No	Questions	CO
1	Find the eigen values of $\begin{pmatrix} 1 & 4 \\ 2 & 3 \end{pmatrix}$	C01
2	Two eigenvalues of the A = $\begin{pmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{pmatrix}$ are 3 & 6. Find the eigen values of A^{-1}.	C01
3	Find the eigenvalues and eigenvectors of the matrix A = $\begin{pmatrix} 11 & -4 & -7 \\ 7 & -2 & -5 \\ 10 & -4 & -6 \end{pmatrix}$	C01

D. Kavitha

Name and Signature of the Faculty Incharge

(N. KAVITHAMANI)

M. [illegible]

HoD/S&H

[N. Sathya]

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DEPARTMENT OF SCIENCE AND HUMANITIES

Tutorial Answer Sheet

Name of the Student : M. R. Nandhini

AU Register Number: 732422 104030

Tutorial – 01			Date of Issue:	08.12.2022	Marks	10
Course code	MA3151	Course Title	MATRICES AND CALCULUS			
Year	I	Semester	I	Date of Submission:	17.12.2022	

Q.No	Questions	CO
1	Find the eigen values of $\begin{pmatrix} 1 & 4 \\ 2 & 3 \end{pmatrix}$	C01
2	Two eigenvalues of the A = $\begin{pmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{pmatrix}$ are 3 & 6. Find the eigen values of A^{-1}.	C01
3	Find the eigenvalues and eigenvectors of the matrix A = $\begin{pmatrix} 11 & -4 & -7 \\ 7 & -2 & -5 \\ 10 & -4 & -6 \end{pmatrix}$	C01

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Problem solving approach	6	6
Correctness of Answer	2	2
Timely submission	2	2
Total marks	10	10

D. Kavi (N. KAVITHAMANI)
Name and Signature of the Faculty Incharge

M. Sathya
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