Indra Ganesan
COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC
IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 1

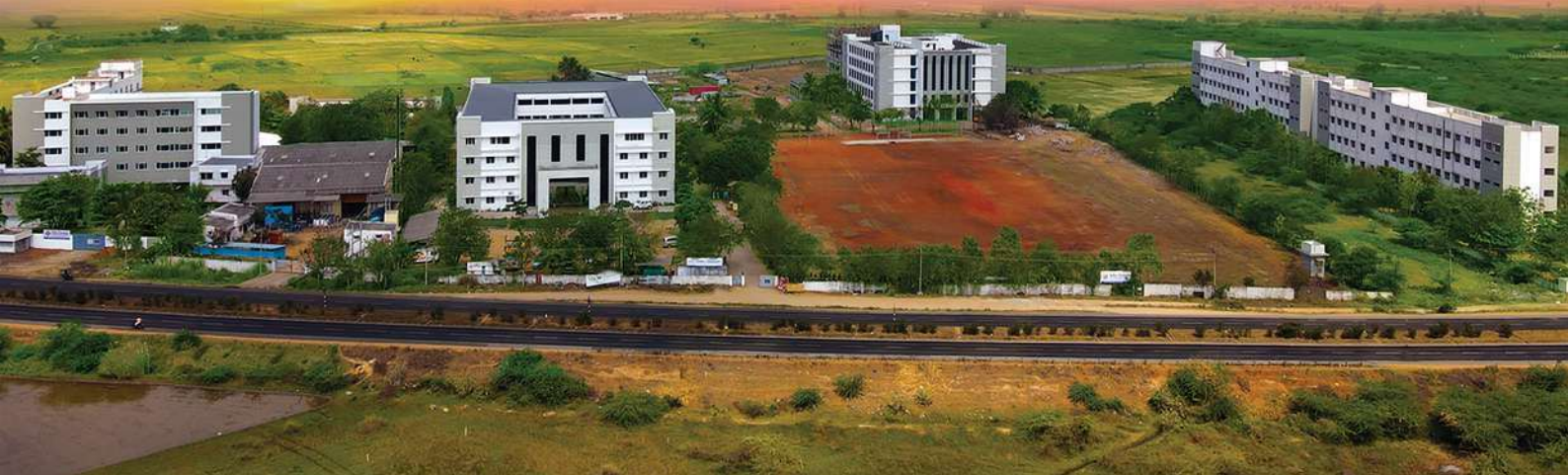
CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

INDRA GANESAN COLLEGE OF ENGINEERING



Criteria 1	Curricular Aspects	100

1.1 Curricular Planning and Implementation (20)

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

Table of Content

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

DEPARTMENT OF SCIENCE AND HUMANITIES

PREFACE OF THE COURSE FILE

Batch : **2018-2022**

Academic Year : **2018 - 2019 /ODD**

Program : **MATHEMATICS**

Year & Semester : **1st Year / 1st Semester**

Course Code : **MA8151** NBA Course Code:

Name of the Course : **ENGINEERING MATHEMATICS**

Faculty in-charge : Mrs. Poonkodi

K Poonkodi
Signature of the Faculty in-charge
(Mrs. K POONKODI)

P. Bhuvaneswari
HoD / S & H

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
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IG Valley, Madurai Main Road
Manikandam, Trichy-620 012.

Indra Ganesan College of Engineering

Madurai Main Road (NH-45B), Manikandam, Tiruchirappalli-620012

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NAAC Accredited, 2 (F) &12 (B) Status Institution by UGC

Department of [illegible]

Work Load - ODD Semester 2018 - 19

S.NO.	Teacher's Name	Course Code	Course Name	Semester	Lecture / week
1	DR. ANITHA S	MA8151	ENGINEERING MATHEMATICS	I/AI&DS	6
		BA4201	STATISTICS FOR MANAGEMENT STUDIES	MBA	6
2	DR. ANITHA S	MA8151	ENGINEERING MATHEMATICS	I/AGRI	6
3	MRS. YAMUNA DEVI N	MA8151	ENGINEERING MATHEMATICS	I/ECE	6
			ENGINEERING MATHEMATICS	I/MECH	
			ENGINEERING MATHEMATICS	I/EEE	
4	DR. ANITHA S	MA8151	ENGINEERING MATHEMATICS	I/IT	6
5	MRS. YAMUNA DEVI N	MA8151	ENGINEERING MATHEMATICS	I/CSE	6

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[redacted] **ENGINEERING MATHEMATICS – I**

L	T	P	C
4	0	0	4

OBJECTIVES :

The goal of this course is to achieve conceptual understanding and to retain the best traditions of traditional calculus. The syllabus is designed to provide the basic tools of calculus mainly for the purpose of modeling the engineering problems mathematically and obtaining solutions. This is a foundation course which mainly deals with topics such as single variable and multivariable calculus and plays an important role in the understanding of science, engineering, economics and computer science, among other disciplines.

UNIT I DIFFERENTIAL CALCULUS **12**

Representation of functions - Limit of a function - Continuity - Derivatives - Differentiation rules - Maxima and Minima of functions of one variable.

UNIT II FUNCTIONS OF SEVERAL VARIABLES **12**

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 – Maxima and minima of functions of two variables – Lagrange's method of undetermined multipliers.

UNIT III INTEGRAL CALCULUS **12**

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.

UNIT IV MULTIPLE INTEGRALS **12**

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.

UNIT V DIFFERENTIAL EQUATIONS **12**

Higher order linear differential equations with constant coefficients - Method of variation of parameters – Homogenous equation of Euler's and Legendre's type – System of simultaneous linear differential equations with constant coefficients - Method of undetermined coefficients.

TOTAL : 60 PERIODS

OUTCOMES :

After completing this course, students should demonstrate competency in the following skills:

- Use both the limit definition and rules of differentiation to differentiate functions.
- Apply differentiation to solve maxima and minima problems.
- Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
- Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
- Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
- Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
- Apply various techniques in solving differential equations.

TEXT BOOKS :

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2014.
2. James Stewart, "Calculus: Early Transcendentals", Cengage Learning, 7th Edition, New Delhi, 2015. [For Units I & III - 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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DEPARTMENT OF SCIENCE AND HUMANITIES

Lecture Schedule

Degree/Program: **B.E/B.TECH**

Course code &Name: **MA8151** – ENGINEERING MATHEMATICS

Duration: **2018-22 (ODD)**

Semester: **I** Faculty: Mrs. Poonkodi

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.
- To make the student with several variables.

COURSE OUTCOMES:

Upon successful completion of the course, students should be able to:

CO	Course Outcomes	POs	PSOs
CO1	Use the matrix algebra methods for solving practical problems	1,2,3,4,5,9,11, 12	-
CO2	Apply differential calculus tools in solving various application problems	1,2,3,4,5,9,11, 12	-
CO3	Able to use differential calculus ideas on several variable functions	1,2,3,4,5,9,11, 12	-
CO4	Apply different methods of integration in solving practical problems	1,2,3,4,5,9,11, 12	-
CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems	1,2,3,4,5,9,11, 12	-
CO6	Techniques to get a knowledge of Engineering applications	1,2,3,4,5,9,11, 12	-

S.No	Period	Topics to be covered	Reference/ Teaching aids and methods	Planned date
UNIT I - DIFFERENTIAL CALCULUS				
1	1	Representation of functions	T2, R2/BB	05.07.2018
2	1	Limit of a function	T2, R2/BB	06.07.2018
3	5	continuity	T2, R2/BB	09.07.2018
4	6	Derivatives and Rates of Change	T2, R2/BB	10.07.2018
5	3	Trigonometric functions	T2, R2/BB	11.07.2018
6	1	The chain rule	T2, R2/BB	12.07.2018

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7	1	Implicit Differentiation	T2, R2/BB	13.07.2018
8	5	Derivatives of hyperbolic functions	T2, R2/BB	16.07.2018
9	5	Inverse hyperbolic functions	T2, R2/BB	17.07.2018
10	6	Differentiation of inverse hyperbolic functions	T2, R2/BB	18.07.2018
11	2	Maximum and minimum values Theorem	T2, R2/BB	19.07.2018
12	4	Mean value Theorem	T2, R2/BB	20.07.2018
UNIT II –FUNCTIONS OF SEVERAL VARIABLES				
13	1	Introduction	T2, R2/BB	23.07.2018
14	1	Euler's Theorem for Homogeneous Function	T2, R2/BB	24.07.2018
15	3	Total Differential Coefficient	T2, R2/BB	25.07.2018
16	5	Differentiation from Implicit Function	T2, R2/BB	26.07.2018
17	1	Jocobians	T2, R2/BB	27.07.2018
18	1	Taylor's series for functions of Two variables	T2, R2/BB	30.07.2018
19	5	Taylor's series related problems	T2, R2/BB	31.07.2018
20	5	Maxima and Minima for the functions of Two variables	T2, R2/BB	01.08.2018
21	6	Maxima and Minima related problems	T2, R2/BB	02.08.2018
22	6	Method of Lagrangian multiplier	T2, R2/BB	03.08.2018
23	2	Lagrangian multiplier related problems	T2, R2/BB	06.08.2018
24	5	Applications	T2, R2/BB	07.08.2018
UNIT III- INTEGRAL CALCULUS				
25	1	The Area Problem	T1, R1/BB	08.08.2018
26	5	The Definite Integral	T1, R1/BB	09.08.2018
27	6	The Fundamental Theorem of Calculus	T1, R1/BB	10.08.2018
28	1	Indefinite Integrals	T1, R1/BB	13.08.2018
29	1	Methods of Integration	T1, R1/BB	14.08.2018
30	5	Integration by parts	T1, R1/BB	15.08.2018
31	6	Trigonometric Substitution	T1, R1/BB	16.08.2018
32	5	Trigonometric Integrals	T1, R1/BB	17.08.2018
33	5	Integration by Parts	T1, R1/BB	20.08.2018
34	1	Trigonometric Integrals	T1, R1/BB	21.08.2018
35	4	Integration of Rational Functions by Partial Fractions	T1, R1/BB	22.08.2018

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36	2	Improper Integrals	T1, R1/BB	23.08.2018
UNIT IV – MULTIPLE INTEGRALS				
37	1	Double Integration in Cartesian Co-Ordinates	T1, R1/BB	04.09.2018
38	1	Double Integration in Polar Co-Ordinates	T1, R1/BB	05.09.2018
39	3	Change of order of Integration	T1, R1/BB	06.09.2018
40	5	Change of variables between Cartesian and Polar Co-Ordinates	T1, R1/BB	07.09.2018
41	5	Double Integration	T1, R1/BB	10.09.2018
42	6	Area as a Double Integral(Cartesian Co-Ordinates)	T1, R1/BB	11.09.2018
43	3	Area as a Double Integral(Polar Co-Ordinates)	T1, R1/BB	12.09.2018
44	3	Change of variables in Double Integrals	T1, R1/BB	13.09.2018
45	1	Volume as Double Integrals	T1, R1/BB	14.09.2018
46	1	Triple Integration	T1, R1/BB	15.09.2018
47	2	Volume as a Triple Integral	T1, R1/BB	16.09.2018
48	8	Applications of Multiple Integrals	T1, R1/BB	17.09.2018
UNIT V - DIFFERENTIAL EQUATIONS				
49	5	Higher order linear differential equations	T1, R1/BB	18.09.2018
50	1	Higher order linear differential equations based on problems	T1, R1/BB	19.09.2018
51	1	Method of variation of parameters	T1, R1/BB	20.09.2018
52	3	Method of variation of parameters related problems	T1, R1/BB	21.09.2018
53	5	Homogeneous equation of Euler's Type	T1, R1/BB	24.09.2018
54	6	Homogeneous equation of Legendre's Type	T1, R1/BB	25.09.2018
55	1	Homogeneous equation of Legendre's Type Problems	T1, R1/BB	26.09.2018
56	1	System of Linear differential equation	T1, R1/BB	27.09.2018
57	3	Linear differential equation with constant coefficients	T1, R1/BB	28.09.2018
58	3	Differential equations problems	T1, R1/BB	09.10.2018
59	7	Method of undetermined coefficients	T1, R1/BB	10.10.2018
60	8	Method of undetermined coefficients based on problems	T1, R1/BB	11.10.2018

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Book Reference – Text Book

S.No	Title of the Book	Author	Publisher	Year
1.	"Higher Engineering Mathematics"	Grewal, B.S., and Grewal, J.S.,	Khanna Publishers, 43 Edition, New Delhi.	2014
2.	Calculus.	James Stewart	Pearson Education, Asia, 7th Edition.	2015

Book Reference – References

S.No	Title of the Book	Author	Publisher	Year
1.	"Calculus"	Anton	Cengage Learning, New Delhi, 8th Edition.	2016
2.	"Advanced Engineering Mathematics"	Walpole. R.E., Myers. R.H., Myers. S.L. and Ye. K	Narosa 3rd Edition	2007

Signature of the Faculty in-charge

HoD /S&H

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DEPARTMENT OF MATHEMATICS

Identification of Curricular Gap & Content Beyond Syllabus(CBS)

Name of the Faculty : Mrs. Poonkodi **Course Code & Name: MA8151/Engineering Mathematics**
Degree & Program: B. Tech/ B.E **Semester & Section: I / All** **Academic Year: 2018 -2019 /ODD**

I. Mapping of Course Outcomes with POs & PSOs. (before CBS)

Table.1 Mapping of COs, C, PSOs with POs - before CBS.

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO2	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO3	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO4	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO5	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO6	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
Cos,POs	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-

II. Identification of content beyond syllabus.

Table.2 Identification of content beyond syllabus

Details of Content Beyond Syllabus (CBS) added	POs strengthened/ vacant filled	CO/Unit
Real life Applications	PO6(2) Vacant filled	CO1 & CO2/ I & II

III. Mapping of Course Outcomes with POs & PSOs. (After CBS)

Table.3 Mapping of COs, C, PSOs with POs- after CBS.

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO2	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO3	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO4	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO5	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO6	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
Cos,POs	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-

Signature of the Faculty 23/11/23

HoD/S&H

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DEPARTMENT OF MATHEMATICS

Assignment Question Paper

Assignment – 01			Date of Issue:	23.07.2018	Marks	10
Course code	MA8151	Course Title	Engineering Mathematics			
Year	I	Semester/Section	I / All	Date of Submission:	30.07.2018	

Q.No	Questions	CO
1	Verify the Cayley Hamilton Theorem of the matrix A = $[2\ -1\ 1\ -1\ 2\ -1\ 1\ -1\ 2]$. Hence A^4 and A^{-1}.	CO1
2	Reduce the quadratic form $3x_1^2 + 3x_2^2 + 3x_3^2 + 2x_1x_2 + 2x_1x_3 - 2x_2x_3$ to canonical form through an orthogonal transformation. Also find its nature, rank, index and signature.	CO1

K. Poongi 23/7/18

Name and Signature of the Faculty Incharge

HoD/S & H

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DEPARTMENT OF MATHEMATICS

Assignment Answer Sheet

Name of the Student : Ragavi . A

AU Register Number: 811218106016

Assignment – 1			Date of Issue: 23.7.2018	Marks	
Course code	MA8151	Course Title			
Year	2018	Semester/Section	I	Date of Submission:	30.7.2018

Q.No	Questions	CO
1	verify CHT of the matrix $A = \begin{pmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$ hence find A^4 and A^{-1}	
2	Reduce QF form $3x_1^2 + 3x_2^2 + 3x_3^2$ find rank, index, signature.	

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Content Quality	6	5
Presentation Quality	2	2
Timely submission	2	1
Total marks	10	8

A Poongodi 30/7/2018

[Mrs. K. Poongodi]
Name and Signature of the Faculty Incharge

HoD 30/7/2018

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Register Number:												

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Internal Assessment			Date/Session	03/10/2018/FN	Marks	100
Course code	MA8151	Course Title	Engineering Mathematics - I			
Regulation	2017	Duration	2 hrs	Academic Year	2018 - 2019	
Year	I	Semester	I	Department	All Course	

COURSE OUTCOMES

CO1:	Develop algorithmic solutions to simple computational problems.
CO2:	Develop and execute simple python programs.
CO3:	Write simple python programs using conditionals and loops for solving problems.
CO4:	Decompose a python program into functions.
CO5:	Represent compound data using python lists, tuples ,dictionaries etc.
CO6:	Read and write data from/to files in python programs.

Q.No.	Question	CO	BTS
	PART A **(Answer all the Questions 9 x 2 = 18 Marks)**		
1	Prove that following integral by interpreting each in terms of areas $\int_a^b x\,dx = \frac{b^2-a^2}{2}$.	CO1	1
2	luate $\int \frac{tan^{tan\,x}}{sec^{sec\,x+tan^{tan\,x}}}$.	CO1	1
3	Evaluate $\int \frac{x+sin^{sin\,x}}{1+cos^{cos\,x}}\,dx$.	CO1	1
4	If f is continuous and $\int_0^4 f(x)\,dx = 10$, find $\int_0^2 f(2x)\,dx$.	CO1	1
5	Evaluate $\int_0^\infty \frac{1}{x^2+4}\,dx$.	CO1	1
6	Evaluate $\int sin\ sin\ 4x\ \ cos\ cos\ 5x\ dx$.	CO1	1
7	Define Riemann sum.	CO1	1
8	For what values of p in the integral $\int_1^\infty \frac{1}{x^p}dx$ convergent ?	CO1	1
9	Evaluate $\int \frac{1}{\sqrt{a^2-x^2}}\,dx$ by using trigonometric substitution.	CO1	1
	PART B **(Answer all the Questions 3 x 14= 42 Marks)**		
10 a	Using integration by parts, evaluate $\int \frac{(ln\,x)^2}{x^2}\,dx$.	CO1	1
	OR		
10 b	Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} cosec^3 x dx$.	CO1	1
11 a	Integrate the following fraction $\int \frac{x^4-2x^2+4x+1}{x^3-x^2-x+1}\,dx$.	CO1	1
	OR		
11 b	Integrate the following with respect to x $\int x\sqrt{1+x-x^2}\,dx$.	CO1	1
12 a	Determine whether the integral $\int_1^\infty \frac{log\,log\,x}{x^2}\,dx$ is convergent or divergent.	CO1	1
	OR		
12 b	i) Integrate the following $\int \frac{10}{(x-1)(x^2+9)}\,dx$. ii) Evaluate $\int \frac{2x+3}{x^2+x+1}\,dx$.	CO1	1

Course Faculty 8/10/2018
(Name /Sign / Date)

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HoD
(Name /Sign / Date)

1) $f(x) = \frac{b^2 - a^2}{x^2}$

2) $\int \frac{\tan x}{\sec x + \tan x} = \sec x - \tan x + x + C$

3) $I = x \tan^{-1} x/a + C$

4) $\int_0^2 f(2x)\,dx = 5$

5) $\int_0^\infty \frac{1}{x^2+4}\,dx = \pi/4$

6) $I = \frac{1}{2}\left[\sec x - \frac{1}{4}\cos 4x\right] + C$

7) $\Delta x = \frac{b-a}{n}$

8) $I = \sin^{-1}\left(\frac{x}{a}\right) + C$

9) $\int \frac{2x+3}{x^2+x+1}\,dx = \log(x^2+x+1) + \frac{4}{\sqrt{3}} \tan^{-1}\left[\frac{2x+1}{\sqrt{3}}\right] + C$

10) $\int \frac{dx}{(x-1)(x^2+9)} = \log(x-1) - \frac{1}{2}\log(x^2+9) - \frac{1}{3}\tan^{-1}\left(\frac{x}{3}\right) + C$

Course Faculty
(Name /Sign / Date)

3/10/2018

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HoD
(Name /Sign / Date)

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Internal Assessment Test Answer Book

Name	Janani ✓			Year/ Semester/Section	I C
Batch No.	2018 - 2019	Date/Session	3/10/2018	Department	ECE
Course code	MA8151	Course Title	Engineering Mathematics		
Internal Assessment Test		IAT 1 ☐	IAT 2 ☐	IAT 3 ☐	Model ☑
Name and Signature of the Invigilator with date		M Ramesh 03/10/2018			

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		(i) 8 (ii) 7			15
2		2	12				(i) 7 (ii) 7	14
3		1	13				(ii) 6 8	14
4		1	14		(i) 7 (ii) 8			15
5		0	15		15			15
6		0	16					73
7		1					Total	73
8		2						
9		1						
10		2						
Total		12	85/100 Grand Total				Mrs. Poonkodi 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	80					100
Marks Obtained	12	73					85

IQAC Audit - Remarks

Name and Signature of the IQAC member

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DEPARTMENT OF MATHEMATICS

ACADEMIC YEAR 2018 – 2019 (ODD SEMESTER)

STUDENTS MARK STATEMENT- CO BASED

AIE-I

SUBJECT CODE &TITLE: MA8151 – Engineering Mathematics I

YEAR/SEM: I/I **MONTH & YEAR: OCT/2018**

S.NO	REG NO	NAME	CO 1	CO 2	TOTAL (50)	TOTAL (100)
1	811218205001	Deepa T	25	17	42	84
2	811218205002	Dharshini K	22	16	38	76
3	811218205003	Gopi U	28	18	46	92
4	811218205004	Harish R	23	12	35	70
5	811218205005	Irudhayaraj A	22	17	39	78
6	811218205006	Janani S	25	12	37	74
7	811218205007	Janarthanan	19	18	37	74
8	811218205008	Kamalesh A	24	17	41	82
9	811218205009	Kaviyarasu C	19	18	37	74
10	811218205010	Kayalvizhi.B	20	20	40	80
11	811218205011	Manoharan T	12	12	24	48
12	811218205012	Meena R	24	14	38	76
13	811218205013	Milton Billgates J	22	20	42	82
14	811218205014	Mohammed Aarif J	24	20	44	88
15	811218205015	Pavithra.N	22	24	46	92
16	811218205016	Priyanka A	18	17	35	70
17	811218205017	Robinson Isaiah E	AB	AB	AB	AB
18	811218205018	Selvi M	16	16	32	64
19	811218205019	Shalini Gayathri S	18	14	32	64
20	811218205020	Sivaraman S	26	14	40	80
21	811218205021	Snekaa R	24	18	42	84
22	811218205022	Suganya K	19	19	38	76
23	811218205023	Vasanth S	20	24	44	88
24	811218205024	Vijayakaran M	16	20	36	72
25	811218205025	Wilson Jayaraj S	18	14	32	64
26	811218205026	Antony Arul Doss A	AB	AB	AB	AB
27	811218205027	Geethanjali R	11	10	21	42
28	811218205001	Deepa T	13	15	28	56
29	811218205002	Dharshini K	16	18	34	68
30	811218205003	Gopi U	18	18	36	72
31	811218205004	Harish R	14	18	32	64
32	811218205005	Irudhayaraj A	24	24	48	96

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MARKS RANGE:

<20	20-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
0	0	0	1	2	5	14	8	5

Total No.of Candidates Present	35
Total No.of Candidates Absent	02
Total No.of Students Pass	34
Total No. of Students Fail	01
Percentage of Pass	97%

K Poogalis 5/10/2018
STAFF INCHARGE

P. Bhuvaneswari
HoD/S & H

PRINCIPAL

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Register Number:

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)

RETEST			Date/Session	10.10.18/AN	Marks	100
Course code	MA8151	Course Title	ENGINEERING MATHEMATICS I			
Regulation	2017	Duration	3 Hrs	Academic Year	2018 - 2019	
Year	I	Semester	I	Department	All Branches	

COURSE OUTCOMES

CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
CO6	Techniques to get a knowledge of Engineering applications

Q.No.	Question	CO	BTS
	PART A **(Answer all the Questions 10 x 2 = 20 Marks)**		
1	State Level of Significance.	1	K2
2	Define Type I and Type II errors.	1	K1
3	State assumptions involved in ANOVA	1	K2
4	What is meant by LSD?	1	K2
5	What is the rate of convergence in NR - method	1	K1
6	State the principle used in Gauss Jordan method	2	K2
7	State the Lagrange's Interpolation formula	2	K4
8	Why Simpson's 1/3 rule is called a closed formula?	2	K2
9	What is a Predictor and Corrector method of solving a differential equation?	2	K1
10	Write Milne's Predictor formula?	2	K1
	PART B **(Answer all the Questions 5 x 16 = 80 Marks)**		
11a	Analysis data give your conclusion	1	K1

BLOCK	Yield			
I	(1) 23	a 25	b 22	ab 38
II	b 40	(1) 26	a 36	ab 38
III	(1) 29	a 20	ab 30	b 20
IV	ab 34	a 31	b 24	(1) 28

	OR		
11b	Solve the following equations by Gauss – Seidel method $27x + 6y - z = 85,\ x + y + 54z = 110,\ 6x + 15y + 2z = 72.$	1	K1

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12a	Two independent samples of sizes 9 and 7 from a normal population had the following values of the variables **Samples I**: 18, 13, 12, 15, 12, 14, 16, 14, 15 **Samples II**: 16, 19, 13, 16, 18, 13, 15 Do the estimates of the population variance differ significantly at **5 %** level ?	**2**	K1
	OR		
12b	(i) Evaluate $\int_1^{1.2}\int_1^{1.4} \frac{1}{x+y}\,dxdy$ by Simpson's y_3 rule by taking $h = k = 0.1$. (ii) If $f(0) = 1, f(1) = 4, f(3) = 40, f(4) = 85$. Find $f(x)$ that satisfies this data using Newton divided difference formula hence find $f(5)$.	**2**	K1
	OR		
13a	An insurance agent has claimed that the average age of policy holders who insure through him is less than the average for all agents which is 30.5 years. A random sample of 100 policy holders who had insured through him gave the following age distribution **Age last birthday**: 16-20, 21-25, 26-30, 31-35, 36-40 **No.of persons**: 12, 22, 20, 30, 16 Calculate the A.M and S.D of this distribution and use these values to test his claim at the **5 %** level of significance.	**1**	K3
	OR		
13b	Two independent samples from normal population with equal variance gave the following **Sample** / **Size** / **Mean** / **S.D** **1** / 16 / 23.4 / 2.5 **2** / 12 / 24.9 / 2.8 Is the difference between the means significant ?	**1**	K3
14a	Two random samples drawn from normal populations are **Sample I**: 20, 16, 26, 27, 23, 22, 18, 24, 25, 19 **Sample II**: 27, 33, 42, 35, 32, 34, 38, 28, 41, 43, 30 Obtain estimates of the variances of the populations and test whether the two populations have the same variance	**2**	K1
	OR		
14b	An insurance agent has claimed that the average age of policy holders who insure through him is less than the average for all agents which is 30.5 years. A random sample of 100 policy holders who had insured through him gave the following age distribution **Age last birthday**: 16-20, 21-25, 26-30, 31-35, 36-40 **No.of persons**: 12, 22, 20, 30, 16 Calculate the A.M and S.D of this distribution and use these values to test his claim at the **5 %** level of significance	**1**	K3

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15a	(i) Find a real root of a equation $cos\ cos\ x = 3x - 1$ correct to four decimal places using fixed point iteration method. (ii) Using Jacobi method to find Eigen values and the corresponding Eigen Vectors of the matrix $\begin{pmatrix} 6 & \sqrt{3} & \sqrt{3} & 4 \end{pmatrix}$	1	K1
	OR		
15b	A group of 10 rats fed on diet A and another group of 8 rats fed on diet B, recorded the following increase in weight (gms) Does it show superiority of Diet A and Diet B ?	1	K3

Diet										
A	5	6	8	1	12	4	3	9	6	10
Diet B	2	3	6	8	10	1	2	8		

K Durga 10/10/2020
Course Faculty
(Name /Sign / Date)

P. B
HoD
(Name /Sign / Date)

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IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 622 012, India
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Internal Assessment Test Answer Book

Name	T. Manoharan			Year/ Semester/Section	I - B
Batch No.	8112182051 / 2018 - 2019	Date/Session	10/10/2018	Department	IT
Course code	MA8151	Course Title	Engineering Mathematics		
Internal Assessment Test		IAT 1 ☐ Re Test	IAT 2 ☐	IAT 3 ☐	Model ☐
Name and Signature of the Invigilator with date			10/10/2018		

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		02	11		12			12
2		02	12		11			11
3		01	13		-			-
4		-	14				14	14
5		01	15					
6		01	16					37
7		02					Total	37
8		02						
9		02						
10		01						
Total		14	Grand Total		51		Name and Signature of the Examiner with date	10/10/2018 Mrs. Poonkodi

To be filled by the examiner

Course Outcomes	1	2	3	4	5	6	Total
Marks allotted	20	80					100
Marks Obtained	14	37					51

IQAC Audit - Remarks

Name and Signature of the IQAC member

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INDRA GANESAN COLLEGE OF ENGINEERING

IG VALLEY, MANIDANDAM, TIRUCHIRAPPALLI – 620 012

DEPARTMENT OF MATHEMATICS

ACADEMIC YEAR 2018 – 2019 (ODD SEMESTER)

STUDENTS MARK STATEMENT- CO BASED

RETEST

SUBJECT CODE &TITLE: MA8151 – ENGINEERING MATHEMATICS I

YEAR/SEM: I/I **MONTH & YEAR: OCT/2018**

S.NO	REG NO	STUDENT NAME	CO1	CO2	TOTAL (50)	TOTAL (100)
1.	811218205011	MANOHARAN T	25	15	40	80
2.	811218205027	GEETHANJALI R	22	10	32	64

MARKS RANGE:

<20	20-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
0	0	0	0	0	1	1	0	0

Total No.of Candidates Present	2
Total No.of Candidates Absent	0
Total No.of Students Pass	2
Total No. of Students Fail	0

STAFF INCHARGE

HoD/S & H

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DEPARTMENT OF ENGLISH

ROOT CAUSE ANALYSIS

Name of the Faculty : Mrs. Poonkodi
Degree & Program : B.E / B.Tech
IA Test : I/II/III/Model
Target : 90 %

Course Code & Name : MA8151 Engineering Mathema
Semester & Section : I. A,B,C,D
University Exam/Month & Year: Nov 2018
Achieved : 50 %

S.NO	REG NO	NAME OF THE STUDENT	CAUSES FOR FAILURE	CORRECTIVE ACTION TAKEN	PREVENTIVE ACTION TAKEN
1.	811218205001	T. Reeja	health issue	Retest	Advised to take ca
2.	811218205003	Gopi J	family issue	Retest	Advised not to take leave
3.	811218205021	R. Sneka	health issue	Retest	Advised to take care of he
4.	811218205016	A. Priyanka	Irregular the class	Retest	Advised to come on colleg
5.	811218205008	A. kamalesh	Irregular	Assignment	Advised to come on colleg
6.	811218205012	Meena. R	health issue	Retest	Advised to take care of he
7.	811218205014	Mohamed Anil. I	health issue	Retest	Don't take leave
8.	811218205017	Robinson. E	family issue	Retest	Advised to take care
9.	811218205019	Shalini	sister's marriage	Retest	Don't take leave
10.	811218205022	Suganya. K	Brother's marrige	Retest	Advised not to take leave
11.	811218205024	Vijayakanth. M	Irregular	Retest	Advised not to take leave
12.	811218205005	Aruljyothi. A	health issue.	Retest	Advised to take care of he

Signature of the faculty member

Signature of the HoD / S & H

1

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IQAC Academic Audit Form

ACADEMIC YEAR: 2018-2019 ODD SEMESTER

Name of Department :	MATHS	Year / Sem / Sec : II / III / A,B,C,D	I/II/A	No. of Students Registered :	143
Details of Examination :	IA Test -1 / IA Test -2 / IA Test -3 / Model Test				

S.No.	Course Code	List of Reg.No Verified	Course Log Book Verified (Y / N)	Course File Verified (Y / N)	No of students Attended	No of Absentees	No of Failures	Pass %	Remarks
1	MA8151	IT 811219205016 811219205021 811219205022	Y	Y	56	2	15	69%	—
2	MA8151	CSE 811220104027 811220104032 811220104045	Y	Y	4	1	2	50%	—
3	MA8151	EEE 811218105012 811218105022 811217105029	Y	Y	36	2	5	82%	—
4	MA8151	MECH 811218114006 811218114013	Y	Y	36	—	7	79%	—
5	MA8151	ECE 811218106007 811218106015	Y	Y	56	5	13	72%	—
6	MA8151	Agri 811218225009 811218225021	Y	Y	38	—	9	76%	—

Verified by

External Member Name and Signature:	
Internal Member Name and Signature:	S. Danabal

Overall Remarks:

HOD/AE&S

IQAC Co-ordinator

Principal

Dr. G. Balakrishnan, M.E., Ph.D.,
Principal
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