

SHARNBASVA UNIVERSITY, KALABURAGI

ADDITIONAL MATHEMATICS -II

COMMON TO ALL BRANCHES

Course Code	21MATDIP41	CIE Marks	50
Contact Hours/Week	02	SEE Marks	00
Total Hours	25	Exam Hours	00
Semester	IV	Credits	00

Course Learning Objectives:

This course will enable students to:

- Solve first order differential equations. .
- Solve second and higher order differential equations.
- Understand and solve the partial differential equation.
- To acquire the knowledge of elementary probability theory.
- Know the basic concepts of evaluation of double and triple integrals.

Course Outcomes(COs):

After completion of course, the student will able to

CO#	Course Outcomes	POs	PSOs
C01	Apply the knowledge of differential equation of first order to solve examples based on Newton's law of cooling.	1, 2, 3	
C02	Solve second and higher order differential equations occurring in of electrical circuits , damped/un-damped vibrations. Explain the applications of Power series and obtain series solution of ordinary differential equations.	1, 2, 3	
C03	Construct a variety of partial differential equations and solution by exact Methods / method of separation of variables.	1, 2, 3	
C04	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.	1, 2, 3	
C05	Apply the knowledge of Probability to solve the simple real life problems	1, 2, 3	

Bloom's level of the course outcomes:

CO#	Bloom's Level					
	Remember (L1)	Understand (L2)	Apply (L3)	Analyze (L4)	Evaluate (L5)	Create (L6)
C01	√	√	√			
C02	√	√	√			
C03	√	√	√			
C04	√	√	√			
C05	√	√	√			

Course Articulation Matrix / Course mapping :

CO#	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2		1				1			1			
C02	3	2	2		1				1			1			
C03	3	2	2		1				1			1			

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C04	3	2	2		1				1			1			
C05	3	2	2		1				1			1			

MODULE-1: DIFFERENTIAL EQUATIONS - 1

Differential Equation-1: Solution of first order and first degree differential equations: Variable separable, Homogeneous, Exact and Reducible to exact differential equation, Linear differential equation. Applications of first order first degree differential equations: Newton's law of cooling.

(RBT Levels: L1, L2 and L3) 5 Hours

Teaching – Learning Process	Chalk and talk method / Power Point Presentation
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MODULE-2: DIFFERENTIAL EQUATIONS - 2

Differential Equations-2: Solution of second & higher order Ordinary linear differential equation with constant co-efficients. Method of variation of parameters. Solution of homogeneous LDE by Power series solution Method.

(RBT Levels: L1, L2 and L3)

5 Hours

Teaching – Learning Process	Chalk and talk method / Power Point Presentation
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MODULE-3: PARTIAL DIFFERENTIAL EQUATIONS (PDE's)

Partial Differential Equations(PDE's): Formation of PDE by eliminating arbitrary constant & functions, Solution of Non-homogeneous PDE by direct integration, solution of homogeneous PDE with respect to one independent variable only. Derivation of one dimensional wave equation and heat equation and Various possible solution of wave & heat equations by methods of separation of variables.

(RBT Levels: L1, L2 and L3)

5 Hours

Teaching – Learning Process	Chalk and talk method / Power Point Presentation
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MODULE-4: IMPROPER INTEGRALS

Improper Integrals: Beta and gamma functions and its properties and examples. Evaluation of double integral over a specific region, changing the order of integration , changing into polar form.

(RBT Levels: L1, L2 and L3)

5 Hours

Teaching – Learning Process	Chalk and talk method / Power Point Presentation
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MODULE-5: PROBABILITY

Probability: Introduction , Sample space and Events. Axioms of Probability, Addition & Multiplication theorems. Conditional probability- illustrative examples. Baye's theorem- examples.

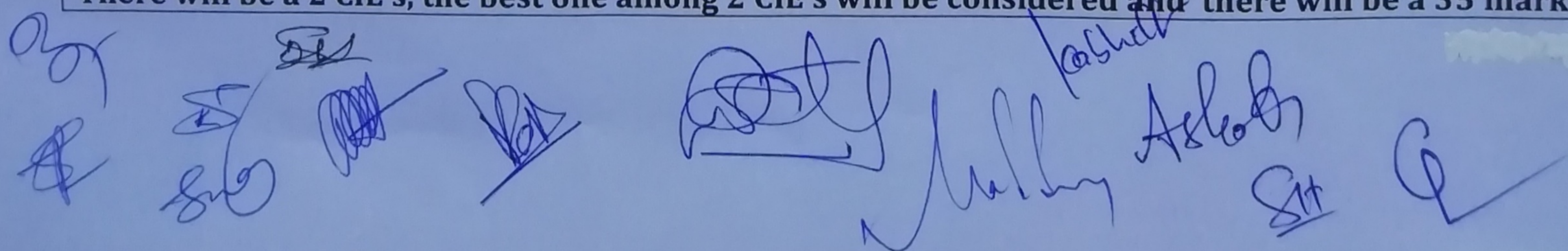
(RBT Levels: L1, L2 and L3)

5 Hours

Teaching – Learning Process	Chalk and talk method / Power Point Presentation
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CIE + Assignments: 15+35=50 Marks

There will be a 2 CIE's, the best one among 2 CIE's will be considered and there will be a 35 marks



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for Assignments

Text Books:

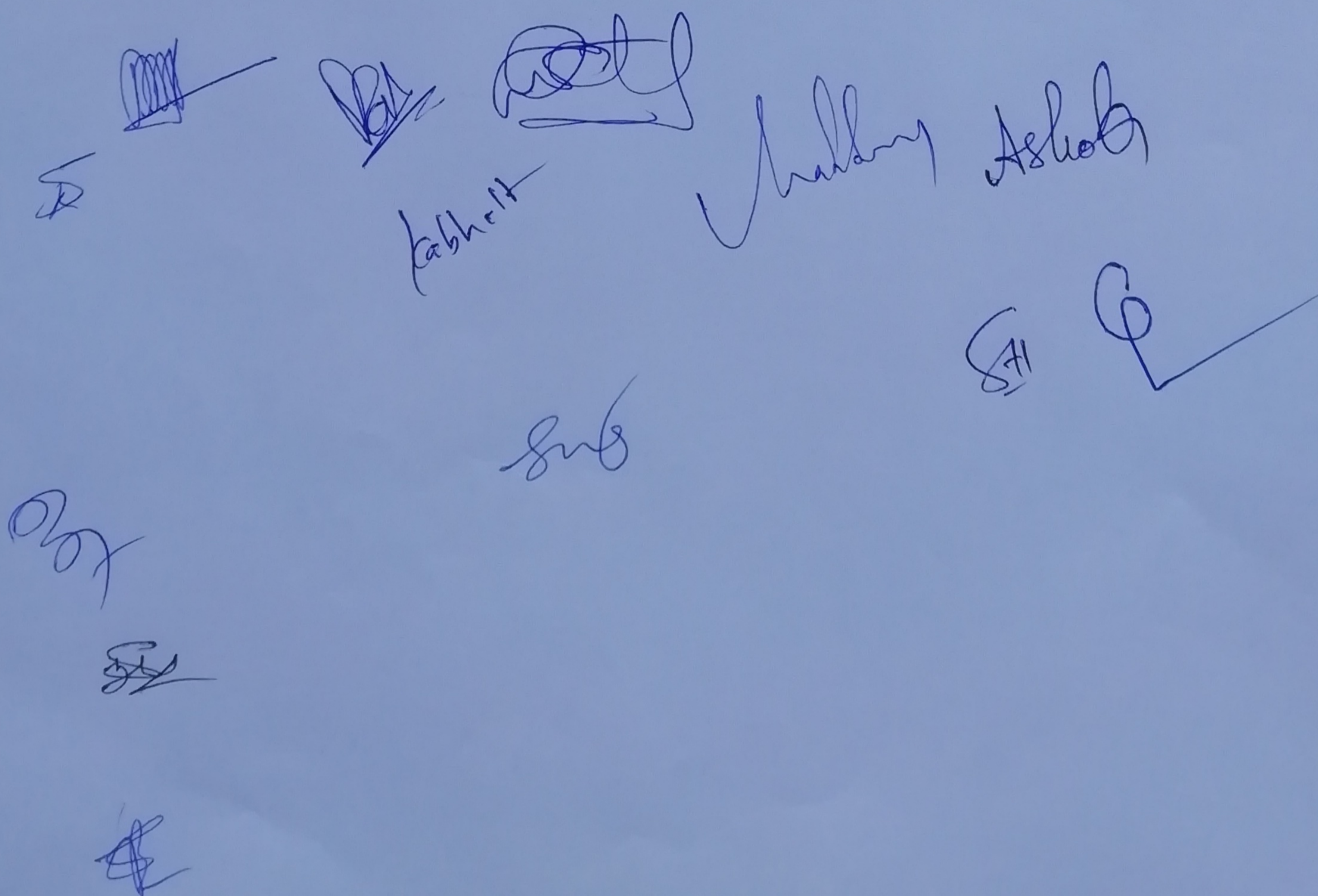
1. B.S. Grewal : Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.
2. E. Kreyszig : Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed.(Reprint), 2016.

Reference books:

1. C.Ray Wylie, Louis C.Barrett : "Advanced Engineering Mathematics", 6th Edition, McGraw-Hill Book Co., New York, 1995.
2. James Stewart : "Calculus –Early Transcendentals", Cengage Learning India Private Ltd., 2017.
3. B.V.Ramana : "Higher Engineering Mathematics" 11th Edition, Tata McGraw-Hill, 2010.
4. Srimanta Pal &Subobh C Bhunia:"Engineering Mathematics", Oxford University Press,3rd Reprint,2016.
5. Gupta C.B., Singh S.R. and Mukesh Kumar : "Engineering Mathematics for Semester I & II", Mc-Graw Hill Education (India) Pvt.Ltd., 2015.

Web links and Video Lectures:

1. <http://nptel.ac.in/courses.php?disciplineID=111>
2. <http://www.class-central.com/subject/math>
3. <http://academicearth.org>.

The bottom half of the page contains several handwritten signatures and initials in blue ink. From left to right, there is a signature that looks like 'S', a signature that looks like 'V', a signature that looks like 'R', a signature that looks like 'Ashok', and a signature that looks like 'G'. Below these, there are more initials: 'Sub', 'SH', and 'G'. At the bottom left, there are more initials: 'Box', 'SH', and 'E'.