National University of Computer & Emerging Sciences
Question List for Calculus II & Differential Equations

Thomas' Calculus

Chapter #	Exercise #	Topic	Question #
10	10.7	Power Series	1-48, 56
	10.8	Taylor and Maclaurin Series	1-36
14	14.1	Functions of Several Variables	1-30
	14.2	Limits and Continuity in Higher Dimensions	1-52, 61-66
	14.3	Partial Derivatives	1-34, 41-60
	14.4	The Chain Rule	1-38
	14.6	Tangent Planes and Differentials	1-18, 23-30
	14.7	Extreme Values and Saddle Points	1-38, 61-64
15	15.1	Double and Iterated Integrals over Rectangles	1-34
	15.2	Double Integrals over General Regions	1-54
	15.3	Area by Double Integration	1-18
	15.4	Double Integrals in Polar Form	1-32

Differential Equations (Zill's Book 7th Edition)

Chapter #	Exercise #	Topic	Question #
12	12.1	Classification of PDEs&Separation of Variable	1-26
	12.3	Solution of Heat Equation	1-6

Differential Equations (Zill's Book 9th Edition)

Chapter #	Exercise #	Topic	Question #
1	1.1	Definitions and Terminology	1-30
	1.2	Initial-Value Problems	1-14
2	2.1	Solution Curves Without a Solution	5-12
	2.2	Separable Differential Equations	1-30
	2.3	Linear Equations	1-37
	2.4	Exact Equations	1-39
	2.5	Solutions by Substitutions	1-30
4	4.1	Initial Value Problem & Boundary Value Problem, Homogeneous & Non-homogeneous Equations	1-35
	4.2	Reduction of Order	1-20
	4.3	Homogeneous Linear Equations with Constant Coefficients	1- 42
	4.4	Undetermined Coefficients	1- 42
	4.5	Undetermined Coefficients	35- 72
	4.6	Variation of Parameters	1- 28, 30
	4.7	Cauchy-Euler Equation	1- 41
5	5.1	Spring/Mass System: Free Undamped, Free Damped, Driven Motion	1-41
6	6.1	Series Solution o Linear Equation	1-4, 11-36
7	7.1	Definition of the Laplace Transform	1-36
	7.2	Inverse Transforms and Transforms of Derivatives	1-42
	7.3	Operational Properties I of Laplace Transform	1-30, 33, 37-70
	7.4	Operational Properties II of Laplace Transform	1-14, 19-34, 37-46, 49-54
	7.5	The Dirac Delta Function	1-12
	7.6	Solving Systems of Linear Differential Equations by Using Laplace Transform	1-12

Weightage Distribution of Final Exam (100 marks)

Thomas' Calculus	Chapter 10	Power Series, Taylor and Maclaurin Series	5%
	Chapter 14	Partial Derivatives	10%
	Chapter 15	Multiple Integrals	20%
Zill's Differential Equation (9th Edition)	Chapter 1& 2	INTRODUCTION & FIRST-ORDER DIFFERENTIAL EQUATIONS	10%
	Chapter 4	HIGHER-ORDER DIFFERENTIAL EQUATIONS	10%
	Chapter 5	MODELING WITH HIGHER-ORDER DIFFERENTIAL EQUATIONS	10%
	Chapter 6	SERIES SOLUTIONS OF LINEAR EQUATIONS	10%
	Chapter 7	THE LAPLACE TRANSFORM	10%
Zill's Differential Equation (7th Edition)	Chapter 12	PARTIAL DIFFERENTIAL EQUATIONS	15%

Note:

- Paper will consist of 9 Questions (1 from each above mentioned partition)

- Marking would be relative (for sections AI-J, AI-K, CSDF-M, DS-N)

Instructions for Remote Final Exams (Students need to follow these instructions strictly)

1. Final exams will be held remotely.

2. Final exams will be placed on LMS (SLATE, Google Classroom, etc.) five minutes before the start time.

3. The standard remote final exam will be attempted offline in the student's own handwriting (in a readable way), except where permission has been taken from the HOD for any other forms of submission.

4. Students must ensure that they have the cam-scanner, MS lens, or an equivalent application installed on their smartphones.

5. Students should carry a clean scanning that is free from any marks/stains etc.

6. The students will use A4 size blank white sheets to attempt the exam (portrait format unless a diagram or table requires landscape). Each sheet of the A4 size paper MUST have the Roll Number, Name, the course code, name of the course and Signature of the student at the top of EACH sheet.

7. The standard duration of attempting the final exam is 3 hours.

8. Students will use cam-scanner, MS lens or an equivalent application to scan and convert their hand-written answer sheets into a SINGLE pdf file (keeping the correct order of pages and question numbers), which they will submit on LMS and MUST also email to the email address (of the concerned course/lab instructor) which will be provided. They will be given 15 minutes (after the 3 hours attempt time)

for this purpose. All students must use the standard file name format (Full course code - Roll number e.g. CS-305-17i-0123). Submission in between15-30 minutes(after the 3 hours attempt time) will be accepted with deduction of 3 marks and Submissions after 30 minutes will NOT be accepted. Try to submit soon after 3 hours of attempt time and do not wait for 15 minutes to be elapsed.

9. The final exam paper question(s) will be based on the same pattern as normal exams conducted on campus. However, objective-type questions will not be given.

10. For proven cheating/ plagiarism, a student will get an F grade even if the student had opted for S/U grade, and the case will be referred to DDC (Department's Disciplinary Committee). Instructors will conduct vivas of randomly selected students or in case of doubt (significantly different attempt as compared to past performance in the course or matching attempt with other students). Plagiarism includes sharing an attempt to other students (copy providing). Students who are not able to satisfactorily answer instructor's questions (based on the exam as well as slightly lateral but related concepts) during viva will also be considered as plagiarism cases.