Semester-1

Session: 2026-27

Part A – Introduction

Subject	Mathematics
Semester	I
Name of the Course	Number Theory and Trigonometry
Course Code	MIC-1
Course ID	260/MAT/MIC101
Course Type: (CC/MIC/ MDC/ /VOC/AEC/VA C/SEC)	MIC
Pre-requisite for the course (if any)	Mathematics as a subject at 4.0 Level (Class-XII)
Course Learning Outcomes(CLOs)	After completing this course, the learner will be able to: 1. Evaluate problems in divisibility, and primes. 2. Explore congruences and Diophantine equations. 3. Apply Euler's theorem, the Chinese Remainder Theorem, and divisor functions to solve modular and arithmetic problems. 4. Expand and analyze trigonometric functions by De Moivre's Theorem.

Credits	**Theory**	**Tutorial**	**Total**
	2	-	2
Contact Hours	2	-	2

Internal Assessment Marks	15
End Term Assessment Marks	35
Examination Time	2 Hours

Part B - Course Content

Instructions for Paper- Setter Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking Course Learning Outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topic	Contact Hours
I	Divisibility, G.C.D.(greatest common divisors), L.C.M.(least common multiple) Primes, Fundamental Theorem of Arithmetic. Linear Congruences.	30
II	Fermat's theorem. Wilson's theorem and its converse. Linear Diophanatine equations in two variables	
III	Euler's $\emptyset$ function, Euler's generalization of Fermat's theorem. Chinese Remainder Theorem, The number of divisors and the sum of divisors of a natural number n (The functions $d(n)$ and σ(n)).	
IV	De Moivre's Theorem and its Applications. Expansion of trigonometrical functions.	

Suggested Evaluation Methods

Internal Assessment:

➢ **Theory 15**

- Class Participation/assignment/quiz/class test etc.: 5
- Mid-Term Exam: 10

End Term Examination:

➢ **Theory 35**

- Written Examination

Part C-Learning Resources

Recommended Books:

1. S.L. Loney, *Plane Trigonometry Part – II*, Macmillan and Company, London..
2. R.S. Verma and K.S. Sukla, *Text Book on Trigonometry*, Pothishala Pvt. Ltd.Allahabad.
3. I.Ninen and H.S. Zuckerman, *An Introduction to the Theory of Numbers*.