Birla Institute of Technology & Science, Pilani
Hyderabad Campus

FIRST SEMESTER 2022-2023
Course Handout Part II

Date: 18.10.2022

In addition to Part-I (General Handout for all courses appended to the timetable) this portion gives further specific details regarding the course.

Course No.   *: BITS F113*
Course Title   *: General Mathematics-I*
Instructor-in-charge   *: Dr. Sabyasachi Dey*

Scopes and objective of the course:

This Course deals with intermediate mathematics needed for Pharmacy students. Course covers set theory, Functions, Coordinate geometry, basic algebra & theory of equations, permutations and combinations, Binomial theorem, Trigonometry, One Dimensional Calculus: Limit and continuity, Differentiation, Integration, Application of derivatives and definite integration.

Text Books:

1. Mathematics for Class XI: Text book for CBSE national council of educational research and training.

2. Mathematics for Class XII part I: Text book for CBSE national council of educational research and training.

3. Mathematics for Class XII part II: Text book for CBSE national council of educational research and training

3. Reference books:

1. Thomas Finney: Calculus & analytic geometry 14th edition Pearson
2. Stewart: Calculus early transcendentals 5e 2003 Thomson.
3. Lectures of Prof. M Ganesh on review of elementary Calculus for the Course Engineering Math.

4. Lecture Plan:

Lect No.	Learning Objectives	Topics to be covered	Chapter in the TB, RB
1-2	To understand the concept of set theory, basics of functions (domain, codomain, range) and relations	Sets, operation on sets, finite and infinite set, power set, Cartesian product, relations and functions	Chapter I &II of text book I
3-6	Concepts of right triangle trigonometry, understand the definitions of the inverse trigonometric functions. To know and apply identities involving the trigonometric functions, Finding solutions of a trigonometric equation	Trigonometric functions and their identities, simple trigonometric equations, trigonometric functions of sum and differences of two angles, inverse trigonometric functions	Chapter III of text book I, Chapter II text book 2
7-8	Concept of complex number, sum, difference, product and quotient of two complex numbers, conjugate of a complex number, polar form, modulus and argument of a complex number, solving quadratic equation.	Complex numbers and quadratic equations	Chap. V article 1-4 & 6
9-10	To understand the fundamental principle of counting, deriving relation between permutation and combination.	Permutations & Combinations	Chap.VII of text book I
11-12	To prove the Binomial theorem for positive integral values, finding the value of a given number using binomial theorem, finding general and middle terms.	Binomial theorem for positive integer power	Chapter VIII of text book I
13-14	Concept of sequence and series, progression and their types, definitions and properties of progression,	Arithmetic progression, geometric progression, Arithmetic mean, geometric mean, infinite series, infinite geometric series,	Chap. IX& appendix 1 of text book 1

	discussion on various types of series.	exponential and logarithmic series	
15-17	Understand the concept of parallel and perpendicular lines, linear equations in various forms, solutions of linear equations, geometric interpretations of equations.	Condition for parallelism and perpendicularity of two lines, angle between lines Equations of line in various forms(slope, intercept, through given two points, slope point, general) distance of a point from a line	Chapter X of text book I
18-21	To understand how circle, ellipse, parabola and hyperbola form the sections of a cone, finding standard equation of circle, parabolas, ellipses and hyperbolas and properties of each of them.	Conic sections, eccentricity, latus rectum, Locus, circle, parabola, hyperbola, ellipse, pair of lines.	Chapter XI of text book I
22-24	Concept of coordinate axes and coordinate planes in three dimensional spaces, finding coordinates of a point in space, compute the distance between two points, section formula and midpoint of a line segment.	Three dimensional geometry (distance, equations of line and plane in space, distance of a point from plane, equation of sphere)	Chap. XII of text book 1 & Chap. XI of text book 3
25-34	Meaning and concept of limits and continuity, understanding differentiation of a function, various theorems based on limit, continuity and differentiability, applications in various forms, concept of maxima and minima.	Limits, continuity, differentiability, higher order derivatives, Chain rule Logarithmic differentiation, mean value theorem, Rolle's theorem, Applications of derivatives to rates, slope of tangents, maxima and minima, indeterminate forms	Chap XIII textbook 1.Chap. V & VI text book 2
35-40	Concept of integration, methods of integrations, understanding fundamental theorem of calculus, Definite integral and its usage in	Anti-derivatives and indefinite integrals, Methods of substitution, parts, partial fractions, trigonometric reduction formulas, fundamental theorem of calculus,	Chapter VII & VIII of text book 3

	finding area under the curves.	Definite integrals, area under curve	

5. Evaluation Scheme:

EC No.	Evaluation Component	Duration	Weightage (%)	Date & Time	Nature of Component
1.	Quiz-1	To be announced later	15	To be announced later	Closed book
2.	Mid semester Exam	90 min	30	04/01 9.00AM -10.30AM	Closed book
3.	Quiz-2	To be announced later	15	To be announced later	Open book
4.	Comprehensive Exam	180 min	40	10/02FN	Open book

The total marks of all the components, taken together will be 100.

6. Announcements: All announcements in relation to the above course will be put up in CMS.

7. Make up policy: Make up for the mid-semester/comprehensive examination will be given to genuine cases.

8. Chamber consultation hours: To be announced in the class.

9. Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor In-Charge
BITS F113