Birla Institute of Technology & Science, Pilani
Hyderabad Campus

FIRST SEMESTER 2020-2021
Course Handout Part II

Date: 17/08/2020

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 : *Nijjwal Karak*

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:

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

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

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	Topic	Article
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	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

	solutions of a trigonometric equation		
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, discussion on various types of series.	Arithmetic progression, geometric progression, Arithmetic mean, geometric mean, infinite series, infinite geometric series, exponential and logarithmic series	Chap. IX& appendix 1 of text book 1
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
25-35	Meaning and concept of limits and continuity, understanding	Limits, continuity, differentiability, higher order derivatives, Chain rule	Chap XIII textbook 1.Chap.

	differentiation of a function, various theorems based on limit, continuity and differentiability, applications in various forms, concept of maxima and minima.	Logarithmic differentiation, mean value theorem, Rolle's theorem, Applications of derivatives to rates, slope of tangents, maxima and minima, indeterminate forms	V & VI text book 2
36-42	Concept of integration, methods of integrations, understanding fundamental theorem of calculus, Definite integral and its usage in finding area under the curves.	Anti-derivatives and indefinite integrals, Methods of substitution, parts, partial fractions, trigonometric reduction formulas, fundamental theorem of calculus, Definite integrals, area under curve	Chapter VII & VIII of text book 3

5. Evaluation Scheme:

EC No.	Evaluation Component	Duration	Weightage (%)	Date & Time	Nature of Component
1.	Test-I	30 min	15	September 10 – September 20 (During scheduled class hour)	Open Book
2.	Test-II	30 min	15	October 09 – October 20 (During scheduled class hour)	Open Book
3	Test-III	30 min	15	November 10 – November 20 (During scheduled class hour)	Open Book
4	Assignment-I	-	15	To be announced in class	Open book
5	Assignment-II	-	15	To be announced in class	Open book
6	Compre. Exam.	120 min	25	TBA	Open Book

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