BM-121

(Semester-II)

Number Theory And Trigonometry

External Marks: 40/27

Internal Marks: 10/6

Time: 3 Hours

Note: Paper setter will set nine questions in all, selecting two questions from each section and one Compulsory question consisting of five parts distributed over all four sections. Candidates are required To attempt five questions, selecting at least one question from each section and the compulsory Question.

Section-I

Divisibility, G.C.D.(greatest common divisors), L.C.M.(least common multiple) Primes, Fundamental Theorem of Arithemetic. Linear Congruences, Fermat's theorem. Wilson's theorem and its converse. Linear Diophanatine equations in two variables

Section-II

Complete residue system and reduced residue system modulo m. Euler function Euler's generalization of Fermat's theorem. Chinese Remainder Theorem. Quadratic residues. Legendre symbols. Lemma of Gauss; Gauss reciprocity law. Greatest integer function [x]. The number of divisors and the sum of divisors of a natural number n (The functions d(n) and s (n)). Moebius function and Moebius inversion formula.

Section-III

De Moivre's Theorem and its Applications. Expansion of trigonometrical functions. Direct circular and hyperbolic functions and their properties.

Section-IV

Inverse circular and hyperbolic functions and their properties. Logarithm of a complex quantity. Gregory's series. Summation of Trigonometry series

REFERENCES

- S.L. Loney : Plane Trigonometry Part – II, Macmillan and Company, London.

- R.S. Verma and K.S. Sukla : Text Book on Trigonometry, Pothishala Pvt. Ltd. Allahabad.

- Ivan Ninen and H.S. Zuckerman. An Introduction to the Theory of Numbers.