

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2, EXAMINATION- APRIL-2018

B.Tech. II Semester (BI/BT)

COURSE CODE: 10B11MA212

MAX. MARKS: 25

COURSE NAME: BASIC MATHEMATICS-II

COURSE CREDITS: 04

MAX. TIME: 1:30 Hrs.

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Quest 1 (a) Test the convergence of series

[3+2]

$$\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{(2n-1)(2n)}$$

(b) Determine the constant "a" so that

$$\vec{F} = (x + 3y)\hat{i} + (y - 2z)\hat{j} + (x - az)\hat{k}$$

is a Solenoidal vector.

Quest (2) Show that the equation

[2+3]

$$(3x^2 + 2e^y) dx + (2xe^y + 3y^2) dy = 0$$

is exact and hence find the solution.

Quest (3) Solve the Bernoulli's equation

[5]

$$\frac{dy}{dx} + \frac{y}{x} = x^2 y^6$$

Quest (4) Solve

[5]

$$(D^2 - 10D + 9) y = e^{4x} + 9 + \sin 3x$$

Quest (5) Solve

[5]

$$(D^2 - 2D + 2) y = e^x x^2 + e^x \cos 2x .$$