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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-2, EXAMINATION- April-2019

B.Tech. II Semester (BI/BT)

COURSE CODE: 18B11MA212/ 10B11MA212 (Backlog)

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) Examine the convergence of the series

[CO-1] [4]

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

Quest (2) If $u = \log \left(\frac{\sqrt{x^2+y^2}}{x} \right)$, prove that

[CO-2] [2]

$$x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 0$$

Quest (3) Show that $\text{Curl}(\text{grad } f) = 0$, where $f = e^{x+y+z}$.

[CO-2] [3]

Quest (4) Solve linear differential equation

[CO-3] [3]

$$\frac{dy}{dx} - \frac{y}{x} = x e^{3x}.$$

Quest(5) Determine under what conditions, the following differential equation is exact and obtain the general solution of the exact equation

[CO-3] [3]

$$(3y + x^3) dx + (ax + y^3) dy = 0$$

Quest(6) Solve

[CO-4] [5]

$$(D^2 - 6D + 9) y = e^{3x} + 7 e^{-2x} - \log 2$$

Quest(7) Solve

[CO-4] [5]

$$(D^2 - 2D + 3) y = \cos x + x$$