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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-1, EXAMINATION- February-2020

B.Tech. II Semester (BI/BT)

COURSE CODE: 18B11MA212 MAX. MARKS: 15

COURSE NAME: BASIC MATHEMATICS-II

COURSE CREDITS: 04 MAX. TIME: 1:00 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] [3]**

$$\sum_{n=1}^{\infty} \frac{\sqrt{(n+1)}-1}{(n+2)^3-1}$$

Quest (2) Test the following series for absolute convergence and conditional convergence.

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

[CO-1] [3]

Quest (3) Express $\frac{\partial w}{\partial u}$ and $\frac{\partial w}{\partial v}$ in terms of u and v by using Chain rule if

$w = xy + yz + zx, \quad x = u + v, \quad y = u - v, \quad z = uv$. **[CO-2] [3]**

Quest (4) If $u = \tan^{-1}\left(\frac{x^3+y^3}{\sqrt{x}+\sqrt{y}}\right)$, then find the value of **[CO-2] [3]**

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

Quest (5) Using Taylor's Theorem, expand $f(x, y) = e^{2x+y}$ about the point $(0, 0)$, upto second degree terms. **[CO-2] [3]**

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