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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1
(February 2018)

B.Tech CE - II SEMESTER

COURSE NAME : Mathematics-II
COURSE CODE : 10B11MA201
COURSE CREDITS : 04

MAXM. MARKS : 15

MAXM. TIME : 1 HOUR

NOTE : Attempt all questions. Marks are indicated against each question.

1. Determine and classify the singular points of the differential equation

$$x^2(x-2)y'' + (x-1)y' + 2xy = 0. \quad [3]$$

2. Find the power series solution of the differential equation

$$y'' - xy' + y = 0$$

about the origin. [5]

3. Applying a suitable test, check the series $\sum_{n=1}^{\infty} \frac{n-2}{n^3-n^2+3}$ for convergence/divergence. [3]

4. Check if the series $\sum_{n=1}^{\infty}(-1)^{n+1}\frac{1}{n^2}$ is convergent or not. Is this series absolutely convergent? [4]