

Prof. Kanayket

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 September 2017

B.Tech / Third Semester

COURSE CODE: 10B11MA201

MAX. MARKS:15

COURSE NAME: MATHEMATICS-II

COURSE CREDITS: 4

MAX. TIME: One Hr

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

1. Solve the differential equation $y'' + x^2y = 0$ in power series about $x = 0$. [4]
2. Express $J_5(x)$ in terms of $J_0(x)$ and $J_1(x)$. [3]
3. Show that $J_1''(x) = -J_1(x) + \frac{1}{2}J_2(x)$. [4]
4. Test the following series for convergence. Is it absolutely convergent?
$$1 - \frac{1}{2\sqrt{2}} + \frac{1}{3\sqrt{3}} - \frac{1}{4\sqrt{4}} + \dots$$
 [2]
5. Test the series $\sum_{n=1}^{\infty} \frac{n^3 - n + 1}{n!}$ for convergence. [2]

MA-3, BT