JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Make-up Examination
(April 2018)

B.Tech CE - II SEMESTER

COURSE NAME : Mathematics-II

COURSE CODE : 10B11MA201

COURSE CREDITS : 04

MAXM. MARKS : 25

MAXM. TIME : 1½ Hour

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

1. For Bessel functions establish the following

$$\int J_1(x)dx = -J_0(x).$$ [5]

2. Express x^5 in terms of Legendre Polynomials. [5]

3. Solve the differential equation $y'' + xy' + y = 0$ in power series about the origin. [7]

4. Prove that the series $\frac{sinx}{1^3} - \frac{sin2x}{2^3} + \frac{sin3x}{3^3} - + \cdots$ converges absolutely. [4]

5. Discuss the convergence of the series $\sum_{n=1}^{\infty} \sqrt{\frac{3^n-1}{2^n+1}}$. [4]