B.Tech-IISemester (CSE/IT/ECE/CE/BT/BI)

COURSE CODE (CREDITS): 24B11MA211 (04)

COURSE NAME: Engineering Mathematics II

MAX. MARKS: 15

COURSE INSTRUCTORS: NKT*, RAD, BKP, MDS

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	Examine the convergence of the following series $$\sum_{n=3}^{\infty} \frac{7n^3 - 3n}{n^2(n-2)(n^2+7)}$$	CO-1	3
Q2	Determine whether the series converges absolutely or diverges for different values of x. $$\frac{-x}{1+\sqrt{1}} + \frac{x^2}{2+\sqrt{2}} - \frac{x^3}{3+\sqrt{3}} + \frac{x^4}{4+\sqrt{4}} - \frac{x^5}{5+\sqrt{5}} + \dots$$ If converges, find the interval and radius of convergence.	CO-1	4
Q3.	Consider the infinite series $S = \sum_{n=1}^{\infty} a_n$. where $a_n = (-1)^{n+1} \frac{n^2}{n^3+4}$. Test the series for $convergence$ or $divergence$.	CO-1	3
Q4.	Find the Fourier series for the periodic function $f(x)$ of period 1 in the interval $\left(-\frac{1}{2}, \frac{1}{2}\right)$ $$f(x) = \frac{1}{2} + x, \quad -\frac{1}{2} < x \le 0$$ $$= \frac{1}{2} - x, \quad 0 < x < \frac{1}{2}$$	CO-1	5