JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1EXAMINATION- 2025

B.Tech-I Semester (BT/BI)

COURSE CODE (CREDITS):24B11MA212 MAX. MARKS: 15

COURSE NAME: MATHEMATICS FOR LIFE SCIENCES-II

COURSE INSTRUCTORS: 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	Explain the *Cauchy* n^{th} *root test*, and investigate the convergence of the series $$\sum_{n=1}^{\infty}\left(\frac{3n+5}{5n+3}\right)^{n}$$	CO-1	3
Q2	Discuss the convergence of the series $$\sum_{n=1}^{\infty}\frac{n(2n+1)}{(100n^3+45n^2+7)}.$$	CO-1	3
Q3	Write the n^{th} term of the following series and examine its convergence $$\frac{x^2}{3\sqrt{8}}+\frac{x^3}{5\sqrt{11}}+\frac{x^4}{7\sqrt{14}}+\cdots\cdots, \quad x>0.$$	CO-1	3
Q4.	Show that the following series is conditionally convergent $$\sum_{n=1}^{\infty}(-1)^{n+1}\frac{n}{(n+1)(n+2)}$$	CO-1	3
Q5.	Making use of chain rules, calculate $\frac{\partial w}{\partial u}, and\ \frac{\partial w}{\partial v}$, where $w=x^2y+y^2+x,\ x=u-v$ and $y=uv$.	CO-2	3