

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-III Semester (CE)

COURSE CODE (CREDITS): 18B11MA311 (03)

MAX. MARKS: 25

COURSE NAME: Numerical Methods

COURSE INSTRUCTOR: NKT

MAX. TIME: 1 Hour 30 Minutes

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	Find the root of the equation $2x - \log_{10}x - 7 = 0$ Correct to three decimal places using method of successive approximation. Root lies between 3 and 4.	CO-1	5												
Q2	Find the largest Eigen value and Eigen vector for the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 7 & 6 \\ 0 & 0 & 10 \end{bmatrix}$ Using power method correct to 4 decimal places	CO-2	5												
Q3	Apply Gauss backward interpolation formula to find the population of a town in 1946 with the help of following data. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Year</td> <td>1931</td> <td>1941</td> <td>1951</td> <td>1961</td> <td>1971</td> </tr> <tr> <td>Population</td> <td>15</td> <td>20</td> <td>27</td> <td>39</td> <td>52</td> </tr> </table>	Year	1931	1941	1951	1961	1971	Population	15	20	27	39	52	CO-3	5
Year	1931	1941	1951	1961	1971										
Population	15	20	27	39	52										
Q4	Use Newton divided difference formula to evaluate $f(6)$ <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>5</td> <td>7</td> <td>11</td> <td>13</td> <td>21</td> </tr> <tr> <td>$f(x)$</td> <td>150</td> <td>392</td> <td>1452</td> <td>2366</td> <td>9702</td> </tr> </table>	x	5	7	11	13	21	$f(x)$	150	392	1452	2366	9702	CO-3	5
x	5	7	11	13	21										
$f(x)$	150	392	1452	2366	9702										
Q5.	Given $\log_{10}654 = 2.8156, \log_{10}658 = 2.8182,$ $\log_{10}659 = 2.8189, \log_{10}661 = 2.8202$ Find $\log_{10}656$	CO-3	5												