|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Roll No. |  |  |  |  |  |  |  |  |  |  |  |  |



**PRESIDENCY UNIVERSITY**

**Bengaluru**

|  |
| --- |
| **End - Term Examinations – JANUARY 2025** |
| **Date:** 06 - 01 - 2025 **Time:** 01:00 pm – 04:00 pm |

|  |  |  |
| --- | --- | --- |
| **School:** School of Information Science | **Program:** BCA | |
| **Course Code :** MAT2007 | **Course Name :** APPLIED MATHEMATICS | |
| **Semester**: I | **Max Marks**: 100 | **Weightage**: 50% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** |
| **Marks** | **34** | **54** | **58** | **34** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Answer ALL the Questions. Each question carries 2marks. 10Q x 2M=20M** | | | | |
| **1** | **If , identify the value of** | **2 Marks** | **L1** | **CO4** |
| **2** | **Identify the inverse of matrix** | **2 Marks** | **L1** | **CO4** |
| **3** | **If and , then identify ?** | **2 Marks** | **L1** | **CO1** |
| **4** | **If the direction ratios of a line are , identify its direction cosines.** | **2 Marks** | **L1** | **CO1** |
| **5** | **Identify the derivative of .** | **2 Marks** | **L1** | **CO2** |
| **6** | **Identify the derivative of .** | **2 Marks** | **L1** | **CO2** |
| **7** | **Identify the derivative of** | **2 Marks** | **L1** | **CO2** |
| **8** | **Compute .** | **2 Marks** | **L1** | **CO3** |
| **9** | **Compute .** | **2 Marks** | **L1** | **CO3** |
| **10** | **Compute .** | **2 Marks** | **L1** | **CO3** |

**Part B**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Answer the Questions Total 80 Marks.** | | | | | |
| **11.** | **a.** | **Estimate the shortest distance between and** | **8 Marks** | **L3** | **CO1** |
|  | **b.** | **Find the vector equation and cartesian form of the line passing through the point and parallel to the vector** | **6 Marks** | **L3** | **CO1** |
|  | **c.** | **Calculate the Area of the parallelogram whose adjacent sides are given by the vectors**  **and .** | **6 Marks** | **L2** | **CO1** |
| **or** | | | | | |
| **12.** | **a.** | **Apply Gauss Elimination method to solve the system of equations** | **8 Marks** | **L3** | **CO4** |
|  | **b.** | **Determine the inverse of .** | **8 Marks** | **L3** | **CO4** |
|  | **c.** | **Apply the Row reduced Echelon form to obtain the rank of the matrix .** | **4 Marks** | **L2** | **CO4** |
|  |  |  |  |  |  |
| **13.** | **a.** | **Apply the Lagrange’s mean value theorem to verify the function in .** | **8 Marks** | **L3** | **CO2** |
|  | **b.** | **Evaluate .** | **6 Marks** | **L3** | **CO2** |
|  | **c.** | **Solve** | **6 Marks** | **L3** | **CO2** |
| **or** | | | | | |
| **14.** | **a.** | **Apply the Cauchy’s mean value theorem to verify the functions in .** | **8 Marks** | **L3** | **CO2** |
|  | **b.** | **Evaluate .** | **6 Marks** | **L3** | **CO2** |
|  | **c.** | **Solve** | **6 Marks** | **L3** | **CO2** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **15.** | **a.** | **Apply suitable method to integrate .** | **8 Marks** | **L3** | **CO3** |
|  | **b.** | **Solve .** | **8 Marks** | **L3** | **CO3** |
|  | **c.** | **Evaluate *.*** | **4 Marks** | **L2** | **CO3** |
| **Or** | | | | | |
| **16.** | **a.** | **Apply appropriate method to integrate .** | **8 Marks** | **L3** | **CO3** |
|  | **b.** | **Apply integration by parts rule to solve and using the obtained result evaluate .** | **8 Marks** | **L3** | **CO3** |
|  | **c.** | **Evaluate .** | **4 Marks** | **L2** | **CO3** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **17.** | **a.** | **Apply Gauss Jordan method to solve** | **10Marks** | **L3** | **CO4** |
|  | **b.** | **If , then find** | **5 Marks** | **L3** | **CO1** |
|  | **c.** | **Determine the direction cosines of the vector**  **.** | **5 Marks** | **L2** | **CO1** |
| **Or** | | | | | |
| **18.** | **a.** | **Apply Rolle’s Theorem to verify the function**  **in** | **8 Marks** | **L3** | **CO2** |
|  | **b.** | **Solve .** | **8 Marks** | **L3** | **CO3** |
|  | **c.** | **Compute .** | **4 Marks** | **L2** | **CO3** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***