**National University of Sciences & Technology  
School of Electrical Engineering and Computer Science**

Department of Humanities & Sciences

MATH-351: Numerical Methods (3+0): 2k20-BEE-12CD Spring 2023

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| **Assignment − 2** | |
| **CLO1:** Explain the consequences of finite precision and describe the amount of error inherent in different Numerical methods.  **CLO2:** Define algorithms for different Numerical techniques.  **CLO3:** Apply different computational techniques to solve Mathematical problems arising in engineering and sciences. | |
| Maximum Marks: 10 | Instructor: Dr. Rai Sajjad |
| Due Date: 4th May 2023 | |

**Note: Perform all necessary steps otherwise marks will be deducted.**

**Question 1:** The velocity profile of a rocket against time is give as below:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| t | 0 | 10 | 15 | 20 | 22.5 | 30 |
| v(t) | 0 | 227.04 | 362.78 | 517.35 | 602.92 | 901.67 |

**Using cubic splines (6 data points so all possible cubic splines will be 5), compute:**

1. Velocity at t = 16 s
2. Acceleration at t = 21 s
3. Distance travelled by rocket between t = 23 s and t = 29 s.

**Submission Details**

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| **Student Name** | **CMS ID** |
| Muhammad Umer | 345834 |
| **Total Marks** | **Marks Obtained** |
| 10 Marks |  |