**Name:**

**Enrolment No:**

**UPES**

**End Semester Examination, December 2024**

**Course: Remedial Mathematics** | **Semester : I**

**Program: B. Pharm** | **Duration : 1.5 Hours**

**Course Code: BP106RMT** | **Max. Marks: 35**

**Instructions: Attempt as per the given instructions**

## SECTION A
**(1Qx10M=10 Marks)**

**Attempt 1 out of 2**

| S. No. | | Marks | COs |
|---|---|---|---|
| Q 1 | Resolve into partial fractions: $\frac{x^2-3x+1}{(x-1)^2(x-2)}$. | 10 | CO1 |
| Q 2 | Solve the following system of equations by matrix method $2x+8y+5z=5$, $x+y-z=-2$, $x+2y-z=2$. | 10 | CO1 |

## SECTION B
**(5Qx5M=25 Marks)**

**Attempt 5 out of 7**

| | | | |
|---|---|---|---|
| Q 3 | Differentiate $y = x^2e^x \log x$ with respect to $x$. | 5 | CO3 |
| Q 4 | Prove that the lines $3x-2y-1=0$ and $9x-6y+5=0$ are parallel. | 5 | CO2 |
| Q 5 | Show that: $2\log\left(\frac{15}{18}\right) - \log\left(\frac{25}{162}\right) + \log\left(\frac{4}{9}\right) = \log 2$. | 5 | CO1 |
| Q 6 | Evaluate $\lim_{x\to 2}\frac{x^2-5x+6}{x^2-4}$. | 5 | CO3 |
| Q 7 | Find the maximum and minimum value, if any, of $f(x) = x^3 - 3x$. | 5 | CO4 |

<table>
<tr><td>Q 8</td><td>The amount of drug dissolved in the body is proportional to the amount present in the capsule. If 30% of 500 mg is dissolved in 1 hour, calculate the time taken to dissolve 500 mg.</td><td>5</td><td>CO4</td></tr>
<tr><td>Q 9</td><td>The total number of units of three products P = 9, Q = 52, and R = 0, that are processed by three machines A, B, and C is given by the matrix<br><table><tr><td></td><td>A</td><td>B</td><td>C</td></tr><tr><td>P</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Q</td><td>2</td><td>5</td><td>7</td></tr><tr><td>R</td><td>2</td><td>1</td><td>-1</td></tr></table>Determine, the time taken by each machine to process the products P, Q, and R.</td><td>5</td><td>CO5</td></tr>
</table>