Name:

Enrolment No:

UPES

Supplementary Examination, December 2023

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

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

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

Instructions: All questions all compulsory

SECTION A

(1Qx10M=10 Marks)

Instructions: Attempt any 1 question out of two.

S. No.		Marks	COs
Q 1	The total number of units of three products $P = 8, Q = 50$ & $R = 0$ that processed by three machines A, B and C is given by the matrix: $$\begin{matrix} & A & B & C \\ P & 2 & 2 & 2 \\ Q & 3 & 5 & 7 \\ R & 4 & 2 & -2 \end{matrix}$$ Determine the time taken by each machine to process the product P, Q and R.	10	CO5
Q 2	In a culture, bacteria increase at the rate proportional to the number of bacteria present. If there are 200 bacteria initially and are doubled in 4 hours, find the number of bacteria present 9 hours later. $(2^{\frac{9}{4}} = 4.76)$	10	CO5

SECTION B

(5Qx5M=25 Marks)

Attempt any 5 questions out of 7

		Marks	COs
Q 1	For what values of a and b the differential equation $(y + x^3)dx + (ax + by^3)dy = 0$ is exact.	5	CO3
Q 2	If $y = \frac{sinx+cosx}{sinx-cosx}$, find $\frac{dy}{dx}$.	5	CO3
Q 3	Apply method of integration by parts Evaluate $I = \int x^2 e^x dx$	5	CO2
Q 4	Determine the Laplace transform of $f(t) = \begin{cases} 1, & 0 < t < 1 \\ e^t, & 1 < t < 4 \\ 0, & t > 4 \end{cases}$	5	CO3
Q 5	Show that the points $A(-3,-3), B(3,3)$ & $C(-3\sqrt{3}, 3\sqrt{3})$ are the vertices of equilateral triangle.	5	CO2
Q 6	Define differential equation, degree and order of differential equation with the help of an example.	5	CO4
Q 7	Determine x in if $\frac{log144}{log12} = logx$	5	CO1