Name:

Enrolment No:

UPES
UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

Course: Remedial Mathematics **Semester: 1st**

Program: B.Sc. Food, Nutrition and Dietetics **Time 03 hrs.**

Course Code: BP106RMT **Max. Marks: 100**

SECTION A

S. No.		Marks	CO
	Statement of question(Attempt all questions)	**20**	
Q 1	Write the minors and co factors of each element of the following: $\begin{vmatrix} 42 & 1 & 6 \\ 28 & 7 & 4 \\ 14 & 3 & 2 \end{vmatrix}$	**4**	**CO1**
Q 2	Determine the partial fraction decomposition of the following expression. $\frac{125+4x-9x^2}{(x-1)(x+3)(x+4)}$	**4**	**CO2**
Q 3	Find put the derivative of following $y=(x^3-6x)(2-4x^3)$	**4**	**CO3**
Q 4	Solve $\int \sin^5 x\,dx$	**4**	**CO4**
Q 5	Solve $\left(1+x^3\right)xy\frac{dy}{dx}=\left(1+y^2\right)\left(1+x+x^2\right)$	**4**	**CO5**

SECTION B

	Statement of question	**40**	
Q 6	Evaluate $\int 5t^3-10t^{-6}+4\,dt$ $\int x^8+x^{-8}\,dx$	**10**	**CO4**
Q 7	Evaluate each of the following integrals $\int 3e^x+5\cos x-10\sec^2 x\,dx$ $\int \frac{7-6\sin^2\theta}{\sin^2\theta}\,d\theta$	**10**	**CO4**

Q 8	Find the Laplace Transform of $(t^2+1)^2$ and $(\sin t - \cos t)^2$	**10**	**CO5**
Q 9	Evaluate the following integral $$\int \frac{6x+13}{x^2+5x+6}\,dx$$	**10**	**CO4**
	SECTION-C		
	Statement of question	**40**	
Q 10	Evaluate **(a)** $\int_{-3}^{1} 6x^2 - 5x + 2\,dx$ **(b)** $\int_{4}^{0} \sqrt{t}\,(t-2)\,dt$	**20**	**CO4**
Q 11	Solve the following system of linear equation by Cramer's Rule and Matrix Method. $x + y + z = 6$ $2y + 5z = -4$ $2x + 5y - z = 27$ Also verify the answer.	**20**	**CO1**