Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

Online End Term Examination, Jan 2021

Course: Business Mathematics | **Semester: I**
Programme: BBA(LM) | **Time: 03 hrs**
Max. Marks: 100 | **Course Code: DSQT1001**

SECTION A

Each Question will carry 5 Marks

S. No.		Marks	CO
	Select the most appropriate	**(5x6)**	
Q 1.	**Find the derivative of the following function: $f(x) = x^2 + 6x + 9$** (A) $f''(x) = 2x + 6 + 9$ (B) $f'(x) = x2 + 6$ (C) $f'(x) = 2x + 6$ (D) $f'(x) = 2x$		**CO1**
Q 2.	**The product of a matrix and its multiplicative inverse is a/an:** (A) Identity Matrix (B) Singular Matrix (C) Non Singular Matrix (D) Diagonal Matrix		**CO1**
Q 3.	**If** $\begin{bmatrix} x+y & 7 \\ 2 & y \end{bmatrix} = \begin{bmatrix} 5 & 7 \\ 2 & 3 \end{bmatrix}$ **then x and y are:** (A) 2 & 3 (B) 3 & 2 (C) 2 & 5 (D) 5 & 3		**CO1**

Q 4.	**If A and B are sets and A∪ B= A ∩ B, then** (A)A = Φ (B)B = Φ (C)A = B (D)None of these		**CO1**
Q 5.	**In an Arithmetic Progression, if a=28, d=-4, n=7, then a_n is:** **(A)4** **(B)5** **(C)3** **(D)7**		**CO1**
Q 6.	The value of the determinant $\begin{vmatrix} x & x+y & x+2y \\ x+2y & x & x+y \\ x+y & x+2y & x \end{vmatrix}$ is **(A)** $9x^2(x+y)$ **(B)** $9y^2(x+y)$ **(C)** $3y^2(x+y)$ **(D)** $7x^2(x+y)$		**CO1**
	SECTION B		
	Each question will carry 10 marks	**(10x5)**	
Q 7.	If $A = \begin{bmatrix} 2 & -1 \\ 3 & 5 \end{bmatrix}$ then verify that $A^{-1}A = I$		**CO2**
Q 8.	An Arithmetic Progression has 23 terms, the sum of the middle three terms of this arithmetic progression is 720, and the sum of the last three terms of this Arithmetic Progression is 1320. What is the 18th term of this Arithmetic Progression?		**CO2**
Q 9.	Evaluate the following integrals: (i) $\int \frac{px^{a-1}}{qx^{b-2}}dx$ (ii) $\int (3\exp(3x) + x^2)dx$		**CO2**

Q 10.	Determine the conditions under which the function $y = x^4 - 6x^2 + 1$ will have (i) a maxima (ii) a minima.Also find out the maximum and minimum value of the function.		**CO3**
Q 11.	Solve the following system of equations, using cramer's rule: X + 2Y + 3Z = -5 3X + Y- 3Z = 4 -3X + 4Y+7Z = -7		**CO3**
SECTION-C			
	Each Question carries 20 Marks	**(20x1)**	
Q 12.	How matrix is different from determinant.Explain with eaxmples.Solve the following equations by using inverse matrix method. $x - 2y + z = 4$ $x - y - z = -2$ $2x + y + z = 5$		**CO4**