Name: Enrolment No:



## UNIVERSITY OF PETROLEUM & ENERGY STUDIES

**End Semester Examination (Online) – Jan, 2021** 

Program: B.Com Subject/Course: Business Mathematics Course Code: DSQT 1001 Semester: I Max. Marks: 100 Duration: 3 Hours

## **Section-A**

	Section 71		
Q.No	Question	Marks	COs
1.	Discuss the difference between Arithmetic Progression and Geometric Progression.	5	CO1
2.	If $A = \begin{bmatrix} 2 & 3 \\ 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 2 & 1 \end{bmatrix}$ then which of the following are incorrect. (a) $(A + B)' = A' + B'$ (b) $(kA)' = \frac{1}{k}A'$ (c) $(A')' = A$ (d) $(AB)' = A'B'$	5	CO1
3	If $\begin{vmatrix} 4 & x \\ -3 & 5 \end{vmatrix} = 8$ then find the value of x.	5	CO1
4	If u and v are the functions of x then by quotient rule of differentiation  (a) $\frac{d}{dx} \left( \frac{u}{v} \right) = \frac{\frac{d}{dx} u + \frac{d}{dx} v}{v^2}$ (b) $\frac{d}{dx} \left( \frac{u}{v} \right) = \frac{v \frac{d}{dx} u - u \frac{d}{dx} v}{v^2}$ (c) $\frac{d}{dx} \left( \frac{u}{v} \right) = \frac{u \frac{d}{dx} v + v \frac{d}{dx} u}{v^2}$ (d) <i>None of the above</i>	5	CO2
5	Value of $\int ax^n dx$ (a) $nax^{n-1} + c$ (b) $a\frac{x^{n+1}}{n+1} + c$ (c) $a\frac{nx^{n-1}}{n-1} + c$ (d) $\frac{x^{n+1}}{n+1} + c$	5	CO3

6	The value of ${}^5C_3$ will be equal to  (a) ${}^5C_2$ (b) $\frac{5!}{3!}$	5	CO4	
	(c) $\frac{5.4}{3.2.1}$ (d) 20			
Section-B				
7	If $A = \begin{bmatrix} 2 & -4 & 3 \\ 1 & 3 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 3 \\ -3 & 4 \\ -2 & 2 \end{bmatrix}$ then find $ AB $ .	10	CO1	
8	Which term of the series 8, $4\sqrt{2}$ , 4, $2\sqrt{2}$ is $\frac{1}{64\sqrt{2}}$ . Also find the sum up to first 6 terms of the given series.	10	CO2	
9	Calculate the derivative of $e^{\frac{x+7}{7x-1}}$ using chain rule.	10	CO2	
10	If $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ , $A = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$ show that $(aI+bA)^3 = a^3I + 3a^2bA$ .	10	CO3	
11	Calculate the value of $\int \frac{3x}{(x-1)(x-2)(x-3)} dx$ .	10	CO3	
Section-C				
12	(a). Find the local maxima and local minima for the function $f(x)=x^3-6x^2+9x+15$ . Also find the local maximum and local minimum values.  'or'  Solve the following using Cramer's Rule. $2X+Y+Z=7$ $3X-Y-Z=-2$ $X+2Y-3Z=-4$	10	CO4	
	(b). In how many ways can the letters of the word "FARIDABAD" can be arranged.	5		
	(c). Find the integral of $\frac{ax^{\alpha-1}}{bx^{\beta-2}}$ .	5		