

Name:
Enrolment No:



UNIVERSITY WITH A PURPOSE

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

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	<p>The value of 5C_3 will be equal to</p> <p>(a) 5C_2</p> <p>(b) $\frac{5!}{3!}$</p> <p>(c) $\frac{5.4}{3.2.1}$</p> <p>(d) 20</p>	5	CO4
Section-B			
7	<p>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.</p>	10	CO1
8	<p>Which term of the series $8, 4\sqrt{2}, 4, 2\sqrt{2}, \dots$ is $\frac{1}{64\sqrt{2}}$. Also find the sum up to first 6 terms of the given series.</p>	10	CO2
9	<p>Calculate the derivative of $e^{\frac{x+7}{7x-1}}$ using chain rule.</p>	10	CO2
10	<p>If $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, $A = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$ show that $(aI+bA)^3 = a^3I + 3a^2bA$.</p>	10	CO3
11	<p>Calculate the value of $\int \frac{3x}{(x-1)(x-2)(x-3)} dx$.</p>	10	CO3
Section-C			
12	<p>(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.</p> <p style="text-align: center;">‘or’</p> <p>Solve the following using Cramer’s Rule.</p> $\begin{aligned} 2X + Y + Z &= 7 \\ 3X - Y - Z &= -2 \\ X + 2Y - 3Z &= -4 \end{aligned}$ <p>(b). In how many ways can the letters of the word “FARIDABAD” can be arranged.</p> <p>(c). Find the integral of $\frac{ax^{\alpha-1}}{bx^{\beta-2}}$.</p>	10	CO4