Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Term Examination, Dec 2019

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

SECTION A

S. No.		Marks	CO
Q 1	Select the most appropriate	(2x10)	
	(i) The value of a determinant is not affected by the interchange of_____ ? a. Rows b. Colums c. both a and b d. None		CO1
	(ii) A square matix is said to be symmetric matrix if a. $A = A^T$ b. $A \neq A^T$ c. $A \leq A^T$ d. $A \geq A^T$		CO1
	(iii) If the order of matrix A is 4x3 and order of matrix B is 3x4, then the order of matrix AB is a. 4x4 b. 3x3 c. 4x3 d. 3x4		CO1
	(iv) Which of the following(s) is a set ? a.People in a class: { Aman, Banty, Harsh } b. Classes offered by a department: { GM, EM,TM,E&IB } c. Sets can cantain non-related elements: { 3, a, red, Mumbai } d. All of the above		CO3
	(v) Which of the following(s) is correct with respect to set ?		CO1

	a. Sets do not have duplicate elements b. Order does not matter c. Sets are usually represented by a capital letter d. All of the above (vi) For a set S = { 2, 3, a, b}which of the following is incorrect? a. a ∈ S b. 3 ∈ S c. 2 ∈ S d. 4 ∈ S (vii) Which of the following is correct in case of sequence? a. It is finite only b. It is infinite only c. Finite and infinite d. None (viii) The 7th term of the GP 2,−6,18,.. is a. 1458 b. -1458 c. 1478 d. None (ix) If y = ax, then second derivative of y is a. 0 b. a c. a/2 d. 1 (x) If y = a/x, then $\int \frac{a}{x} dx$ is equal to a. a log(x) b. a log(x) + c c. a x + c d. a/2x^2 + c		**CO1** **CO1** **CO1** **CO1** **CO1**
	SECTION B		
	Attempt any eight questions	**(5x8)**	
Q 2	Which term of the G.P., 5, 10, 20,…. is 5120 ?		**CO2**
Q 3	Functions f is defined by f(x) = 1/x^2 + 3/x		**CO2**

	Find f(-4) and f(-1/2)		
Q 4	The sum of three numbers of A.P. is -6 and the product is 24. Find the numbers.		**CO2**
Q 5	Solve the following system of equations, using matix method: X + 2Y + Z = 7 X + 3Z = 11 2X - 3Y = 1		**CO3**
Q 6	For a given sets find union and intersection of sets. A = { a, e, i, o, u} and B = { Newdelhi, Dehradun, o , Mumbai, a}		**CO2**
Q 7	Let A=$\begin{pmatrix} 3 & -4 \\ 0 & 2 \end{pmatrix}$, B=$\begin{pmatrix} 1 & 3 \\ -2 & 0 \end{pmatrix}$ Find each of the following: (i) $A - \frac{B}{2}$ (ii) 3A- B/2		**CO2**
Q 8	Draw the graph of the function f (x)= $2x^2$-4x-2		**CO2**
Q 9	Evaluate the following integrals: (i) $\int \frac{px^{a-1}}{qx^{b-2}}\,dx$ (ii) $\int (3\exp(3x) + 2^x)\,dx$		**CO2**
Q 10	Find derivative of each of the following functions : y = $\frac{x^2-4x-3}{7+e^x}$ and y = $\frac{ax-b}{d-cx}$		**CO2**
	SECTION-C		
	Attempt any four questions	**(10x4)**	

Q 11	A company produces three products everyday. Their total production on a certain day is 45 tons.It is found that the production of third product exceeds the production of first product by 8 tons while the total production of first and third product is twice the production of second product.Determine the production level of each product using Cramer's rule.		**CO4**
Q 12	A machine initially costs Rs 6400 with no scrap value. The cost of operating is Rs 500 in the first year and the increase Rs 800 in each successive year. Determine, (i) the number of years it should be operated for minimizing per year average cost. (ii) corresponding average cost.		**CO4**
Q 13	Price of a new bike is Rs 1,75000 and it can be resold for Rs 61,000 after 15 years.Determine the value of bike after 6 years, assuming that the value is depreciated linearly.		**CO2**
Q 14	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.		**CO2**
Q 15	For three consecutive months, a person deposits some amount of money on the first day of each month in small savings fund.These three successive amounts in the deposit, the total value of which is Rs 65, form a G.P..If the two extreme amounts be multiplied each by 3 and mean by 5, the products form an A.P..Find the amount in the first and second deposits.		**CO4**