Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Term Examination, Dec 2019

Course: Business Mathematics and Statistics — **Semester: I**
Programme: B.Com(Hons) — **Time: 03 hrs**
Max. Marks: 100 — **Course Code: DSQT1007**

SECTION A

S. No.		Marks	CO
Q 1	Select the most appropriate	(2x10)	
	(i) Which of the following(s) is most stable mesures of central tendency? a. the mean b. the median c. the mode d. All		CO1
	(ii) A----------is an arrangement of all or part of a set objects in a definite order. a. Function b. Factorial c. Combination d. Permutation		CO1
	(iii) If the order of matrix A is mxp and order of matrix B is pxn, then the order of matrix AB is a. mxp b. mxn c. nxm d. mxp		CO1
	(iv) Inverse of a square matrix is possible only if its determinant is a.Zero b. Non-zero c. One d. Minus one		CO1
	(v) Derivative of ‘y’ with respect of ‘x’ represents		CO1

	a. Rate of change of y with respect to x b. Rate of change of x with respect to y c. Distance of y with respect to x d. None		**CO1**
	(vi) The derivative of a derivative is called_____ a. Anti-derivative b. Second order derivative c. Integration d. First order derivative		**CO1**
	(vii) The variance of a sample of 11 observations equals 16. The standard deviation of the sample equals a. 0 b. 40 c. 4 d. 16		**CO1**
	(viii) Which of the following is a probability sampling? a. Quota sampling b. Systematic c. Snow ball d. Purposive		**CO1**
	(ix) Probability is always lies between a. -1 to 1 b. -1 to 0 c. 0 to 1 d. 0 to 1/2		**CO1**
	(x) Which of the following is not a mesure of dispersion? a. Range b. M.D. c. S.D. d. Mode		
	SECTION B		
	Attempt any eight questions	**(5x8)**	
Q 2	How many terms of the series 1,6,11,…. Be taken so that their sum is 148.		**CO2**
Q 3	Functions f is defined by		**CO2**

	$f(x) = 1/x + 3x^2$ Find f(-2) and f(1/2)		
Q 4	There are 4 statistics books B_1, B_2, B_3, B_4 . How many different groups of 2 books can be taken from from the 4 books.		**CO3**
Q 5	How scalar matrix is different from square matrix?		**CO1**
Q 6	How many terms of G.P. 1+4+16+64+….. will make the sum 5461 ?		**CO2**
Q 7	Let A=$\begin{pmatrix}3 & 4\\3 & 2\end{pmatrix}$, B=$\begin{pmatrix}1 & 3\\-2 & 5\end{pmatrix}$ Find each of the following: (i) $\frac{A}{3} - \frac{B}{2}$ (ii) 3A-B		**CO1**
Q 8	Draw the graph of the function f (x)= x^2-2x-1		**CO2**
Q 9	We have observed stock exchange rates for ten days as 85, 86, 87, 88, 89, 88, 91, 92, 93, 89. Compute all measures of central tendency.		**CO2**
Q 10	Find derivative of each of the following functions: y = $\frac{x^2-4x-3}{e^x}$ and y = $\frac{x^2-3}{x^3-4}$		**CO2**
	SECTION-C		
	Attempt any four questions	**(10x4)**	
Q 11	The probability of student A and student B solving a problem are 0.6 and 0.3 respectively.If the probability of atleast one of them solving is 0.7. Find the chance of both of them solving the problem.		**CO3**
Q 12	The following data corresponds to marks obtained by 200 students in a university examination. Find the average score and S.D. of the scores of these students. Marks obtained | No. of students		**CO3**

	10-20 | 2 20-30 | 8 30-40 | 20 40-50 | 30 50-60 | 80 60-70 | 30 70-80 | 20 80-90 | 8 90-100 | 2 Total | 200		
Q 13	The following are the marks obtained by B.Com students in mid-term examination of Business Mathematics and Statistics: 23, 50, 38, 42, 63, 75, 12, 33, 26, 39, 35, 47, 43, 52, 56, 59, 64, 77, 15, 21, 51, 54, 72, 68, 36, 65, 52, 60, 27, 34, 47, 48, 55, 58, 59, 62, 51, 48, 50, 41, 57, 65, 54, 43, 56, 44, 30, 46, 67, 53,14,100,79,85,86,92,95,62,40,45,34,32,100,65,54,23,35,76,54 (i) Form the discrete frequency distribution table. (ii) Construct percentage frequency distribution table.		**CO3**
Q 14	Determine the conditions under which the function $y = x^3 + 10x^2 + 25x - 40$ will have (i) a maxima (ii) a minima.Also find out the maximum and minimum value of the function.		**CO2**
Q 15	A transport company uses 3 types of trucks T_1, T_2, T_3 to transport 3 types of vechiles V_1, V_2, V_3. The capacity of each truck in terms of 3 types of vechiles is given below: | | V_1 | V_2 | V_3 | |---|---|---|---| | T_1 | 1 | 3 | 2 | | T_2 | 2 | 2 | 3 | | T_3 | 3 | 2 | 2 | Using matrix method, find the number of trucks of each type required to transport 85,105 and 110 vechicles of V_1, V_2, and V_3 types respestively.		**CO4**