

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Term Examination, Dec 2019

Course: Business Mathematics and Statistics

Programme: B.Com(BMI)

Max. Marks: 100

Semester: I

Time: 03 hrs

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 measures 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 $m \times p$ and order of matrix B is $p \times n$, then the order of matrix AB is a. $m \times p$ b. $m \times n$ c. $n \times m$ d. $m \times p$		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

	<p>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</p> <p>(vi) The derivative of a derivative is called _____ a. Anti-derivative b. Second order derivative c. Integration d. First order derivative</p> <p>(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</p> <p>(viii) Which of the following is a probability sampling? a. Quota sampling b. Systematic c. Snow ball d. Purposive</p> <p>(ix) Probability is always lies between a. -1 to 1 b. -1 to 0 c. 0 to 1 d. 0 to 1/2</p> <p>(x) Which of the following is not a mesure of dispersion? a. Range b. M.D. c. S.D. d. Mode</p>		<p>CO1</p> <p>CO1</p> <p>CO1</p> <p>CO1</p> <p>CO1</p> <p>CO1</p>
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 the 4 books.		CO3
Q 5	How scalar matrix is different from square matrix?		CO1
Q 6	How many terms of G.P. $1+4+16+64+\dots$ 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 at least 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. <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 50%;">Marks obtained</td> <td style="width: 50%;">No. of students</td> </tr> </table>	Marks obtained	No. of students		CO3
Marks obtained	No. of students				

	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	<p>The following are the marks obtained by B.Com students in mid-term examination of Business Mathematics and Statistics:</p> <p>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</p> <p>(i) Form the discrete frequency distribution table.</p> <p>(ii) Construct percentage frequency distribution table.</p>			CO3																
Q 14	<p>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.</p>			CO2																
Q 15	<p>A transport company uses 3 types of trucks T_1, T_2, T_3 to transport 3 types of vehicles V_1, V_2, V_3. The capacity of each truck in terms of 3 types of vehicles is given below:</p> <table border="1"> <thead> <tr> <th></th> <th>V_1</th> <th>V_2</th> <th>V_3</th> </tr> </thead> <tbody> <tr> <th>T_1</th> <td>1</td> <td>3</td> <td>2</td> </tr> <tr> <th>T_2</th> <td>2</td> <td>2</td> <td>3</td> </tr> <tr> <th>T_3</th> <td>3</td> <td>2</td> <td>2</td> </tr> </tbody> </table> <p>Using matrix method, find the number of trucks of each type required to transport 85, 105 and 110 vehicles of V_1, V_2, and V_3 types respectively.</p>			V_1	V_2	V_3	T_1	1	3	2	T_2	2	2	3	T_3	3	2	2		CO4
	V_1	V_2	V_3																	
T_1	1	3	2																	
T_2	2	2	3																	
T_3	3	2	2																	