Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

Course: Quantitative Methods **Semester: I**
Program: MBA (PM) **Time: 03 Hours**
Course code: DSQT7001 **Max. Marks: 100**

SECTION A **(20 Marks)**

	Each question in section A is a multiple-choice question with four answer choices. Read each question and choose the one best answer.	Marks	CO
1.	The percent of total variation of the dependent variable Y explained by the set of independent variables X is measured by a) Coefficient of Correlation b) Coefficient of Skewness c) Coefficient of Determination d) Standard Error of Estimate	2	CO1
2.	A coefficient of correlation is computed to be -0.95 means that a) The relationship between two variables is weak b) The relationship between two variables is strong and positive c) The relationship between two variables is strong and but negative d) Correlation coefficient cannot have this value	2	CO1
3.	In a Poisson probability distribution a) The mean and variance of the distribution are the same (equal) b) The probability of success is always greater than 5 c) The number of trials is always less than 5 d) It always contains a contingency table	2	CO1
4.	If the occurrence of one event means that another cannot happen, then the events are a) Independent b) Mutually Exclusive c) Bayesian d) Empirical	2	CO1

5.	**Coefficient of Correlation values lies between** **a) -1 and +1** **b) 0 and 1** **c) -1 and 0** **d) None of these**	**2**	**CO1**
6.	**If two variables oppose each other then the correlation will be** **a) Positive Correlation** **b) Zero Correlation** **c) Perfect Correlation** **d) Negative Correlation**	**2**	**CO1**
7.	**The Coefficient of Correlation r is independent of** **a) Origin only** **b) Scale of Measurement only** **c) Both change of origin and scale of measurement** **d) None of these**	**2**	**CO1**
8.	**Two regression lines are parallel to each other if their slope is** **a) Different** **b) Same** **c) Negative** **d) None of these**	**2**	**CO1**
9.	**If X~N(55,49) then σ** **a) 104** **b) 49** **c) 55** **d) 7**	**2**	**CO1**
10.	**Normal Distribution is** **a) Mesokurtic** **b) Leptokurtic** **c) PLatykurtic** **d) None of these**	**2**	**CO1**
	SECTION B	**(20 Marks)**	
Answer all the questions:			
11.	**A person deposited ₹5000 in a savings bank account at the end of first year and every succeeding year, he deposited ₹100 more than the preceding years. What amount has he deposited at the end of 20^{th} years?**	**5**	**CO1, CO2**

<table>
<tr><td>12.</td><td>Explain types of relations with example.</td><td>5</td><td>CO1, CO2</td></tr>
<tr><td>13.</td><td>City residents were surveyed recently to determine readership of newspapers available. 50% of the residents read the morning paper, 60% read the evening paper, and 20% read both newspapers. Find the probability that a resident selected reads either the morning or evening paper or both the papers.</td><td>5</td><td>CO1, CO2</td></tr>
<tr><td>14.</td><td>A random variable X has the following probability function
<table>
<tr><td>Value of X,</td><td>0</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>p(x)</td><td>0</td><td>k</td><td>2k</td><td>2k</td></tr>
</table>
i.Find k,
ii.Evaluate P(X<6), and P(0<X<5)
iii.Determine the distribution function of X.
iv.Calculate expectation of X [E(X)] which is also called mean of random number.</td><td>5</td><td>CO1, CO2</td></tr>
<tr><td colspan="4">SECTION-C (30 Marks)</td></tr>
<tr><td colspan="4">Answer any three questions:</td></tr>
<tr><td>15.</td><td>A car hire firm has two cars which is hires out day to day. The number of demands for a car on each day is distributed as Poissin variate with mean 1.5.
a) Calculate the proportion of days on which neither cas is used.
b) Find the proportion of days on which some demand is refused .</td><td>10</td><td>CO1, CO2, CO3</td></tr>
<tr><td>16.</td><td>Data for strawberry sale from a shop is given
<table>
<tr><td rowspan="6">Strawberry Sales During 100 days</td><td>Daily Sales (number of cases)</td><td>Number of Days Sold</td></tr>
<tr><td>10</td><td>15</td></tr>
<tr><td>11</td><td>20</td></tr>
<tr><td>12</td><td>40</td></tr>
<tr><td>13</td><td>25</td></tr>
<tr><td>Sum</td><td>100</td></tr>
</table>
If cost of one case is ₹200 and selling price is ₹500 . find out the optimal stock to minimize expected loss. Assume that demand for the product can take on only four values(10,11,12,13) and strawberries are worth nothing one day later.</td><td>10</td><td>CO1, CO2, CO3</td></tr>
</table>

17.	**The coefficient of rank correlation of marks obtained by 10 students in English and Economics was found to be 0.5. It was later discovered that the difference in ranks in the two subjects obtained by one of the students was wrongly taken as 3 instead of 7. Find the correct coefficient of rank correlation.**	**10**	**CO1, CO2, CO3**
18.	**A study has been proposed to investigate the relationship between the birthweight of male babies and their adult height. Using the following data, fit a regression line between birthweight of male babies and their adult height. What percentage of the variation in adult height is explained by this regression line?** **Birthweight (lb) / Adult Height(cm)** **6 / 159** **7 / 180** **6.5 / 156** **8 / 161** **8.2 / 181** **7 / 160**	**10**	**CO1, CO2, CO3**
	SECTION-D	**(30 Marks)**	
19.	**Suppose that you are interested in using past expenditure on research and development by a firm to predict current expenditures on R&D. you got the following data by taking a random sample of firms, where X is the amount on R&D(in lakhs of rupees) 5 years ago and Y is the amount spent on R & D(in lakhs of rupees) in the current year:** **X: 30, 50, 20, 80, 10, 20, 20** **Y: 50, 80, 30, 110, 20, 40, 50**		
(a)	**Calculate the correlation coefficient of given data .**	**10**	**CO1, CO2, CO3, CO4**
(b)	**Find the regression equation of Y on X.**	**10**	**CO1, CO2, CO3, CO4**
(c)	**If a firm is chosen randomly and X=10, can you use the regression to predict the value of Y?**	**10**	**CO1, CO2, CO3, CO4**