Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, May 2020

Course: Quantitative Methods **Semester: I**
Program: MBA (O&G/L&SCM/AVM) **Time: 03 Hours**
Course code: DSQT7001 **Max. Marks: 100**

SECTION A **(6x5=30 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.	**i) 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** **ii) 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**	**5**	**CO1**
2.	**i) 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** **ii) If the occurrence of one event means that another cannot happen, then the events are** **a) Independent** **b) Mutually Exclusive** **c) Bayesian** **d) Empirical**	**5**	**CO1**

3.	**i) Coefficient of Correlation values lies between** **a) -1 and +1** **b) 0 and 1** **c) -1 and 0** **d) None of these** **ii) If two variables oppose each other then the correlation will be** **a) Positive Correlation** **b) Zero Correlation** **c) Perfect Correlation** **d) Negative Correlation**	**5**	**CO1**
4.	**i) If two variables oppose each other then the correlation will be** **a) Positive Correlation** **b) Zero Correlation** **c) Perfect Correlation** **d) Negative Correlation** **ii) Two regression lines are parallel to each other if their slope is** **a) Different** **b) Same** **c) Negative** **d) None of these**	**5**	**CO1**
5.	**i) If X~N(55,49) then σ** **a) 104** **b) 49** **c) 55** **d) 7** **ii) Normal Distribution is** **a) Mesokurtic** **b) Leptokurtic** **c) PLatykurtic** **d) None of these**	**5**	**CO1**
6.	**i) The coefficient of correlation** **a) is the square of the coefficient of determination** **b) is the square root of the coefficient of determination** **c) is the same as r-square** **d) can never be negative** **ii) If two variables, x and y, have a very strong linear relationship, then** **a) there is evidence that x causes a change in y** **b) there is evidence that y causes a change in x** **c) there might not be any causal relationship between x and y** **d) None of these alternatives is correct.**	**5**	**CO1**

SECTION B (5x10=50 Marks)

1 Compute median for the following data:

No. of units of Electricity Consumes	0-200	200-300	400-600	600-800	800-1000
No. Of Families	5	10	34	21	10

10 **CO2**

2 Twelve salesmen are ranked for efficiency and length of service as below:

Salesman	A	B	C	D	E	F	G	H	I	J	K	L
Efficiency(X)	1	2	3	4	4	4	7	8	9	10	11	12
Length of Service (Y)	2	1	5	3	9	7	7	6	4	11	10	11

Find the value of Spearman's Rank Coefficient.

10 **CO2**

3 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

If a firm is chosen randomly and X=10, use the regression to predict the value of Y?

10 **CO2**

4 **One-fifth per cent of the blades produced by a blade manufacturing factory turn out to be defective. The blades are suppled in packets of 10. Use Poisson distribution to calculate the approximate number of packet containing no defective, one defective and two defective blades respectively in a consignment of 100000 packets.**

$$(\boldsymbol{Given}\ e^{0.02} = 0.9802)$$

10 **CO3**

5 The average daily sale of 500 branch offices was ₹150 thousand and the Standard deviation is ₹ 15 thousand. Assuming the distribution to be normal, indicate how many branches have sales between ₹ 120000 and ₹ 145000.

(Given:

$$\boldsymbol{Area} < (Z = 0.2) = 0.5793$$
$$\boldsymbol{Area} < (Z = 0.33) = 0.6293$$
$$\boldsymbol{Area} < (Z = 2.0) = 0.9772$$
$$\boldsymbol{Area} < (Z = 3.3) = 0.9995$$

)

10 **CO3**

SECTION-C (1x20= 20 Marks)

1 **Suppose we have two coffee packet filling machines that fill 200 gm packets. You promise the customers that you would give one packet free as a penalty if the coffee is short of the specified weight of 200 gm by 5 gm. Due to random process weight of coffee in each packet follows a random distribution. Let X be a random variable denoting the weight of the coffee with distribution for the two machines as follows:**

Machine A

$X = x_i$	190	195	200	205	210
$P(X = x_i)$	0.1	0.2	0.4	0.2	0.1

Machine B

$X = x_i$	198	199	200	201	202
$P(X = x_i)$	0.1	0.2	0.4	0.2	0.1

Find the mean and variance of the weight these coffee packs will have .Which of the machine will you prefer?

20 **CO4**