

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2021

Course: Business Statistics

Program: BBA (DM)

Course code: DSQT1004

Instructions: All the sections are compulsory.

Semester: II

Time: 03 Hours

Max. Marks: 100

SECTION A

1. Each Question will carry 5 Marks

2. Instruction: Select the correct answer(s)

S.No	Question:	CO
Q 1	<p>a) The strength (degree) of the correlation between a set of independent variables X and a dependent variable Y is measured by</p> <ul style="list-style-type: none">i) Coefficient of Correlationii) Coefficient of Determinationiii) Standard error of estimateiv) All of the above <p>b) Let the coefficient of determination computed to be 0.39 in a problem involving one independent variable and one dependent variable. This result means that</p> <ul style="list-style-type: none">i) The relationship between two variables is negativeii) The correlation coefficient is 0.39 alsoiii) 39% of the total variation is explained by the independent variableiv) 39% of the total variation is explained by the dependent variable	CO1
Q2	<p>a) In which approach to probability the outcomes are equally likely to occur?</p> <ul style="list-style-type: none">i) Classical Probabilityii) Subjective Probabilityiii) Relative Frequencyiv) Independent <p>b) Which of the following is not a condition of the binomial distribution?</p> <ul style="list-style-type: none">i) Only 2 possible outcomesii) Have a constant probability of successiii) Must have at least 3 trialsiv) Trials must be independent	CO1
Q3	<p>a) The Coefficient of Correlation between U and V where $U=X$ and $V=-X$ is</p> <ul style="list-style-type: none">i) +1ii) -1iii) 0iv) 0.5	CO1

	<p>b) If both regression coefficients are less than zero ($b_{yx} < 0$ and $b_{xy} < 0$), then correlation coefficient r is</p> <p>a) $=0$ b) <0 c) >0 d) Not equal to 0</p>	
Q4	<p>a) Total Area under the normal curve is</p> <p>i) 0 ii) 1 iii) Greater than 1 iv) Less than 1</p> <p>b) A coefficient of correlation is computed to be -0.95 means that</p> <p>i) The relationship between two variables is weak ii) The relationship between two variables is strong and positive iii) The relationship between two variables is strong and but negative iv) Correlation coefficient cannot have this value</p>	CO1
Q5	<p>a) Coefficient of Correlation values lies between</p> <p>i) -1 and +1 ii) 0 and 1 iii) -1 and 0 iv) None of these</p> <p>b) Two regression lines are parallel to each other if their slope is</p> <p>i) Different ii) Same iii) Negative iv) None of these</p>	CO1
Q6	<p>a) If $X \sim N(55,49)$ then σ</p> <p>i) 104 ii) 49 iii) 55 iv) 7</p> <p>b) If a positively skewed distribution has a median of 50, which of the following statement is true?</p> <p>i) Mean is greater than 50 ii) Mean is less than 50 iii) Mode is less than 50 iv) Mode is greater than 50 v) Both A and C vi) Both B and D</p>	CO1

SECTION B

- 1. Each question will carry 10 marks
- 2. Instruction: Write short / brief notes

Q1	Find the median: <table border="1" style="margin-left: auto; margin-right: auto;"><thead><tr><th>Wages Rs.</th><th>No. of workers</th></tr></thead><tbody><tr><td>60-70</td><td>5</td></tr><tr><td>50-60</td><td>10</td></tr><tr><td>40-50</td><td>15</td></tr><tr><td>30-40</td><td>5</td></tr><tr><td>20-30</td><td>7</td></tr></tbody></table>	Wages Rs.	No. of workers	60-70	5	50-60	10	40-50	15	30-40	5	20-30	7	CO2				
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60-70	5																	
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Q2	In two factories A and B located in the same industrial area, the average weekly wages (in rupees) and the standard deviations are as follows: <table border="1" style="margin-left: auto; margin-right: auto;"><thead><tr><th>Factory</th><th>Average</th><th>Standard Deviation</th><th>No. of worker</th></tr></thead><tbody><tr><td>A</td><td>34.5</td><td>5</td><td>476</td></tr><tr><td>B</td><td>28.5</td><td>4.5</td><td>524</td></tr></tbody></table> <p>a) Which factory A or B pays out a larger amount as weekly wages? b) Which factory A or B has greater variability in individual wages?</p>	Factory	Average	Standard Deviation	No. of worker	A	34.5	5	476	B	28.5	4.5	524	CO2				
Factory	Average	Standard Deviation	No. of worker															
A	34.5	5	476															
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Q3	The daily temperature recorded in a city in Russia in a year is given below. <table border="1" style="margin-left: auto; margin-right: auto;"><thead><tr><th>Temperature C^0</th><th>No of Days</th></tr></thead><tbody><tr><td>-40 to -30</td><td>10</td></tr><tr><td>-30 to -20</td><td>18</td></tr><tr><td>-20 to -10</td><td>30</td></tr><tr><td>-10 to 0</td><td>42</td></tr><tr><td>0 to 10</td><td>65</td></tr><tr><td>10 to 20</td><td>180</td></tr><tr><td>20 to 30</td><td>20</td></tr></tbody></table> <p>Calculate Variance.</p>	Temperature C^0	No of Days	-40 to -30	10	-30 to -20	18	-20 to -10	30	-10 to 0	42	0 to 10	65	10 to 20	180	20 to 30	20	CO2
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Q4	Define regression. Why there are two regression equations? If 2 regression coefficients are $b_1 = 4.5$ and $b_2 = 9.20$. What would be the value of r ?	CO3																
Q5	Explain central limit theorem.	CO3																

SECTION-C

- 1. Each Question carries 20 Marks.**
- 2. Instruction: Write long answer.**

Q1	<p>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:</p> <table border="1" style="margin-left: auto; margin-right: auto;"><tr><td>X</td><td>30</td><td>50</td><td>20</td><td>80</td><td>10</td><td>20</td><td>20</td></tr><tr><td>Y</td><td>50</td><td>80</td><td>30</td><td>110</td><td>20</td><td>40</td><td>50</td></tr></table>	X	30	50	20	80	10	20	20	Y	50	80	30	110	20	40	50	CO4
X	30	50	20	80	10	20	20											
Y	50	80	30	110	20	40	50											
a)	Calculate the correlation coefficient of given data .																	
b)	Find the regression equation of Y on X.																	