

Name:
Enrolment No:



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

Course: Business Statistics
Course Code: DSQT1004
Programme: BBA (AO)
Time: 03 Hours
Instructions:

Semester: II

Max. Marks: 100

SECTION A

Q.1.	Point out the correct answer from the following:	Marks	CO
a)	Which of the following of a random variable is a measure of spread? i) Variance ii) Standard Deviation iii) Mean iv) All of the above	2	CO1
b)	A numerical value used as a summary measure for a sample, such as sample mean, is known as a i) population parameter ii) sample parameter iii) sample statistic iv) population mean v) None of the above answers is correct.	2	CO2
c)	Which of these measures are used to analyze the central tendency of data? i) Mean and Normal Distribution ii) Mean, Median and Mode iii) Mode, Alpha & Range iv) Standard Deviation, Range and Mean v) Median, Range and Normal Distribution	2	CO1
d)	Which of the following measures of central tendency will always change if a single value in the data changes? i) Mean ii) Median iii) Mode	2	CO1

	iv) All of these		
e)	<p>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</p> <p>ii) Mean is less than 50</p> <p>iii) Mode is less than 50</p> <p>iv) Mode is greater than 50</p> <p>v) Both A and C</p> <p>vi) Both B and D</p>	2	CO1
f)	<p>Standard deviation can be negative.</p> <p>i) TRUE</p> <p>ii) FALSE</p>	2	CO1
g)	<p>The descriptive measure of dispersion that is based on the concept of a deviation about the mean is</p> <p>i) the range</p> <p>ii) the interquartile range</p> <p>iii) both a and b</p> <p>iv) the standard deviation</p> <p>v) None of the above answers is correct.</p>	2	CO2
h)	<p>The measure of dispersion that is influenced most by extreme values is</p> <p>i) the variance</p> <p>ii) the standard deviation</p> <p>iii) the range</p> <p>iv) the interquartile range</p> <p>v) None of the above answers is correct.</p>	2	CO2
i)	<p>In computing descriptive statistics from grouped data,</p> <p>i) data values are treated as if they occur at the midpoint of a class</p> <p>ii) the grouped data result is more accurate than the ungrouped result</p> <p>iii) the grouped data computations are used only when a population is being analyzed</p> <p>iv) All of the above answers are correct.</p> <p>v) None of the above answers is correct.</p>	2	CO1
j)	Which of the following is not a measure of dispersion?	2	CO1

	i) the range ii) the 50th percentile iii) the standard deviation iv) the interquartile range v) the variance		
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SECTION B

	Answer all the following.	Marks	CO
3.	Explain the concept of regression. What are the properties of the regression line?	5	CO1,C O2
4.	Explain independent and mutually exclusive events and also give examples.	5	CO1,C O2
5.	Explain the methods of calculation of rank correlation coefficient. What are the advantages of Spearman's rank correlation over Karl Pearson's correlation coefficients?	5	CO1,C O2
6.	Define standard deviation. what are the limitation of standard deviation?	5	CO1,C O2

SECTION-C

	Answer all the following.	Marks	CO																
Q.7	Find the median: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th align="center">Wages Rs.</th> <th align="center">No. of workers</th> </tr> </thead> <tbody> <tr> <td align="center">60-70</td> <td align="center">5</td> </tr> <tr> <td align="center">50-60</td> <td align="center">10</td> </tr> <tr> <td align="center">40-50</td> <td align="center">15</td> </tr> <tr> <td align="center">30-40</td> <td align="center">5</td> </tr> <tr> <td align="center">20-30</td> <td align="center">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	6	CO1,C O2				
Wages Rs.	No. of workers																		
60-70	5																		
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40-50	15																		
30-40	5																		
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Q.8	Calculate the regression line Y on X for the following data: <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td align="center">X</td> <td align="center">11</td> <td align="center">21</td> <td align="center">33</td> <td align="center">40</td> <td align="center">52</td> <td align="center">16</td> </tr> <tr> <td align="center">Y</td> <td align="center">9</td> <td align="center">18</td> <td align="center">20</td> <td align="center">32</td> <td align="center">41</td> <td align="center">13</td> </tr> </tbody> </table> Obtain an estimate of Y which should correspond to the X=8	X	11	21	33	40	52	16	Y	9	18	20	32	41	13	6	CO3, CO4		
X	11	21	33	40	52	16													
Y	9	18	20	32	41	13													
Q.9	Calculate coefficient of correlation from the following data. And also make a scatter plot. <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td align="center">X</td> <td align="center">12</td> <td align="center">9</td> <td align="center">8</td> <td align="center">7</td> <td align="center">11</td> <td align="center">13</td> </tr> <tr> <td align="center">Y</td> <td align="center">14</td> <td align="center">8</td> <td align="center">6</td> <td align="center">9</td> <td align="center">11</td> <td align="center">10</td> </tr> </tbody> </table>	X	12	9	8	7	11	13	Y	14	8	6	9	11	10	6	CO3, CO4		
X	12	9	8	7	11	13													
Y	14	8	6	9	11	10													
Q.10	Two students X and Y work independently on a problem. The probability that X will solve it is $\frac{3}{4}$ and the probability that Y will solve it is $\frac{2}{3}$. What is the probability that the problem will be solved?	6	CO3, CO4																
Q.11	From the following data calculate the rank correlation coefficient. <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td align="center">x</td> <td align="center">4</td> <td align="center">13</td> <td align="center">40</td> <td align="center">9</td> <td align="center">16</td> <td align="center">16</td> <td align="center">17</td> </tr> <tr> <td align="center">y</td> <td align="center">3</td> <td align="center">8</td> <td align="center">24</td> <td align="center">6</td> <td align="center">4</td> <td align="center">6</td> <td align="center">9</td> </tr> </tbody> </table>	x	4	13	40	9	16	16	17	y	3	8	24	6	4	6	9	6	CO2, CO3, CO4
x	4	13	40	9	16	16	17												
y	3	8	24	6	4	6	9												

SECTION-D**Answer all the questions****Marks****CO**

Q.12

You are given below the following information about advertising and sales.

	Advertising (X) Expenditure (Rs. In Crores)	Sales(Y) (Rs. In Crores)
Mean	10	40
Standard Deviation	3	2
Coefficient of correlation	0.8	

15**CO1,
CO2,
CO3,
CO4**

(a) Calculate the two regression lines.

(b) Find the likely sales when advertisement expenditure is Rs 15 crores.

What should be advertisement expenditure if the company wants to attain sales target of Rs. 30 crores?

Q.13

The coefficient of rank correlation of marks obtained by 20 students in English and Economics was found to be 0.8. 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.

15**CO1,
CO2,
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CO4**

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SECTION A

Q.1.	Fill in the blanks:	Marks	CO
a)	The number of observations corresponding to a particular class is known the of the class.	1	CO1
b)	The heading of the row in a statistical table is known as	1	CO1
c)	Median is same asQuartile.	1	CO1
d)	Central tendencyand can be calculated from the frequency distribution with open end classes.	1	CO1
e)	If the coefficient of kurtosis has a value less than 3, the distribution is	1	CO1
f)	In regression analysis, the variable we are trying to predict, is called thevariable.	1	CO1
g)	If both the regression coefficients are negative, the correlation coefficient would be	1	CO1
h)	The under-root of twocoefficients gives us the value of correlation coefficient.	1	CO1
i)	Probability ranges fromto	1	CO1
j)	If A and B are mutually exclusive events, $P(A/B)=\dots\dots\dots$	1	CO1
Q.2	State which of the following statements is true or false:		
a)	Sampling errors are present both in a census as well as a sample survey.	1	CO1
b)	Sampling error can be reduced by increasing the size of the sample.	1	CO1
c)	A relative frequency can be obtained by dividing the frequency by the total number of observations.	1	CO1
d)	Arithmetic mean can be computed for open end distributions.	1	CO1
e)	Coefficient of variation is expressed in same units as the original data.	1	CO1
f)	In a frequency distribution, if a curve has a longer tail to the right, then it is negatively skewed.	1	CO1
g)	Coefficient of correlation must be in the same units as the original data.	1	CO1
h)	The negative correlation in two series means that, as the value of the variables, decreases the value of the other variable would also decrease.	1	CO1

i)	The regression line cut each other at the point of average of X and Y.	1	CO1																				
j)	The conditional probability of the given A is written as P(A/B).	1	CO1																				
Section B																							
Answer all the question of this section																							
Q.3	Explain the concept of regression. What are the properties of the regression coefficients?	5	CO1,C O2																				
Q.4	Explain difference between independent and mutually exclusive events and also give examples.	5	CO2,C O3																				
Q.5	Explain the methods of calculation of correlation coefficient. What are the advantages of Spearman's rank correlation over Karl Pearson's correlation coefficients?	5	CO2,C O3																				
Q.6	Define mean deviation. How does it differ from standard deviation?	5	CO2,C O3																				
Section C																							
Answer any five of the following questions																							
Q.7	Calculate the lines of regression for the following data: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>X</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>Y</td> <td>9</td> <td>8</td> <td>10</td> <td>12</td> <td>11</td> <td>13</td> <td>14</td> </tr> </table> <p style="text-align: center;">Obtain an estimate of Y which should correspond to the X=6.2</p>	X	1	2	3	4	5	6	7	Y	9	8	10	12	11	13	14	6	CO1,C O2,CO 3				
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Q.11	In a frequency distribution the coefficient of skewness based on quartiles is 0.5. If the sum of upper and lower quartiles is 28 and the median is 11, find the values of lower and upper quartile.	6	CO1,C O2,CO 3																				
Section D																							
Answer following questions		Marks	CO																				
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