


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, May 2023			
Course: Business Statistics Program: BBA ALL Course Code: DSQT1004		Semester: II Time: 03 hrs. Max. Marks: 100	
Instructions: Attempt all questions			
SECTION A (10Qx2M=20Marks)			
S. No.		Marks	CO
Q 1	Multiple choice questions		
(i)	In how many different ways can the letters of the word 'FIGHT' be arranged? (a) 110 (b) 120 (c) 105 (d) 115	2	CO1
(ii)	Ogives can be helpful in locating graphically the (a) mode (b) mean (c) median (d) none of the above	2	CO1
(iii)	Two variables are said to be independent if. (a) $r = 0$ (b) $r = +1$ (c) $r = -1$ (d) $r = +0.5$	2	CO1
(iv)	The ratio of the standard deviation to the arithmetic mean expressed as a percentage is called: (a) Coefficient of standard deviation (b) Coefficient of skewness (c) Coefficient of kurtosis (d) Coefficient of variation	2	CO1

(v)	<p>What is the range of a data set?</p> <p>(a) The difference between the highest and lowest values in the data set. (b) The most frequently occurring value in the data set. (c) The middle value of the data set. (d) The average value of the data set.</p>	2	CO1
(vi)	<p>In regression analysis, which variable is considered the dependent variable?</p> <p>(a) The variable being predicted or explained (b) The variable used to make the prediction or explanation (c) Both variables are considered independent (d) None of the above</p>	2	CO1
(vi)	<p>The mean of an examination is 69, the median is 68, the mode is 67, and the standard deviation is 3. The measures of variation for this examination is:</p> <p>(a) 67 (b) 68 (c) 69 (d) 3</p>	2	CO1
(viii)	<p>Two events A and B are statistically independent when.</p> <p>(a) $P(A \cap B) = P(A) \times P(B)$ (b) $P(A B) = P(A)$ (c) $P(A \cup B) = P(A) + P(B)$ (d) both (a) and (b)</p>	2	CO1
(ix)	<p>Which of the following correlation coefficients represents a perfect positive linear relationship between two variables?</p> <p>(a) 0.5 (b) 0 (c) 1 (d) -1</p>	2	CO1
(x)	<p>The lack of uniformity or symmetry is called:</p> <p>(a) Skewness (b) Dispersion (c) Kurtosis (d) Standard deviation</p>	2	CO1

SECTION B (4Qx5M= 20)**Write short notes**

Q2	What is correlation coefficient How do you interpret the strength of a correlation?	5	CO2
Q3	Explain and illustrate the classical approach to probability.	5	CO2
Q4	What is the difference between mean, median, and mode?	5	CO2
Q5	A company wants to determine the relationship between the size of a product and its price. They collected data on the size and price of 50 products and estimated a regression model with the equation Price = 10 + 2 Size. What is the predicted price of a product with a size of 20 and 33?	5	CO2

SECTION-C (3Qx10M=30 Marks)

Q6	In a single throw of two dice, find the probability of getting. (a) a total of 11 and (b) same number on both the dice.	10	CO3																						
Q7	A researcher wishes to determine if a person's age is related to the number of hours he or she exercises per week. The data obtained from a sample is given below: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Age (X)</td> <td>18</td> <td>26</td> <td>32</td> <td>38</td> <td>52</td> <td>59</td> </tr> <tr> <td>Hours (Y)</td> <td>10</td> <td>5</td> <td>2</td> <td>3</td> <td>1.5</td> <td>1</td> </tr> </table> Calculate Karl Pearson's coefficient of correlation and comment on the result.	Age (X)	18	26	32	38	52	59	Hours (Y)	10	5	2	3	1.5	1	10	CO3								
Age (X)	18	26	32	38	52	59																			
Hours (Y)	10	5	2	3	1.5	1																			
Q8	The following data gives the number of finished articles turned out per day by different number of workers in a factory. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>No. of articles</td> <td>18</td> <td>19</td> <td>20</td> <td>21</td> <td>22</td> <td>23</td> <td>24</td> <td>25</td> <td>26</td> <td>27</td> </tr> <tr> <td>No. of workers</td> <td>3</td> <td>7</td> <td>11</td> <td>14</td> <td>18</td> <td>17</td> <td>13</td> <td>8</td> <td>5</td> <td>4</td> </tr> </table> Find the standard deviation, and coefficient of variation of daily output of finished articles.	No. of articles	18	19	20	21	22	23	24	25	26	27	No. of workers	3	7	11	14	18	17	13	8	5	4	10	CO3
No. of articles	18	19	20	21	22	23	24	25	26	27															
No. of workers	3	7	11	14	18	17	13	8	5	4															

SECTION-D (2Qx15M= 30 Marks)

Q9	The marks obtained by 10 students in their graduation and the MBA entrance test were found as given below. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Graduation</td> <td>50</td> <td>52</td> <td>55</td> <td>60</td> <td>62</td> <td>65</td> <td>65</td> <td>66</td> <td>70</td> <td>75</td> </tr> <tr> <td>Entrance test</td> <td>52</td> <td>50</td> <td>57</td> <td>65</td> <td>65</td> <td>62</td> <td>65</td> <td>65</td> <td>71</td> <td>78</td> </tr> </table> From these paired data, find.	Graduation	50	52	55	60	62	65	65	66	70	75	Entrance test	52	50	57	65	65	62	65	65	71	78	15	CO4
Graduation	50	52	55	60	62	65	65	66	70	75															
Entrance test	52	50	57	65	65	62	65	65	71	78															

	(i) the two regression equations, (ii) the coefficient of correlation between two sets of marks.												
Q10	<p>The welfare committee of a large housing complex wants to understand the possibility of appointing private security guards at the entrance gate of the complex for 24-hour duty. There are 810 flats in the housing complex, and the owners were asked to vote for or against the proposal. The following data were collected:</p> <table border="1"> <thead> <tr> <th colspan="2"><i>Should the guards be appointed</i></th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>194</td> </tr> <tr> <td>No</td> <td>121</td> </tr> <tr> <td>Not sure</td> <td>73</td> </tr> <tr> <td>No response</td> <td>422</td> </tr> </tbody> </table> <p>(a) Convert the data to percentages and construct (i) a bar chart and (ii) a pie chart. Which of these charts do you prefer to use? Why?</p> <p>(b) Eliminating the 'no response' group, convert the remaining 388 responses to percentages and again construct bar and pie charts.</p>	<i>Should the guards be appointed</i>		Yes	194	No	121	Not sure	73	No response	422	15	CO4
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Yes	194												
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