



<p>iii. Given <math>f(x) = 2x + 3</math> and <math>g(x) = -x^2 + 5</math>, find <math>(g \circ f)(-1)</math>.  a. 20 b.-10 c.-2 d. 10 e. None</p>		<b>CO1</b>
<p>vi. Find the 10th term of the arithmetic progression 1, 3.5, 6, 8.5, ...  a.23.5 b.22.5 c.23 d.22</p>		<b>CO1</b>
<p>v. Functions of statistics consists of  a. Collection of data  b. Tabulation of data  c. Analysis of data  d. Interpretation of results  Which one is correct?  i. only c  ii both a &amp; c  iii. a, b &amp; c  iv. All of the above  v. None</p>		<b>CO1</b>
<p>vi. Which of the following descriptive statistics is least affected by adding an outlier to a data set?  a. the mean  b. the median  c. the range  d. the standard deviation</p>		<b>CO1</b>
<p>vii. If a data set has an even number of observations, the median  a. can not be determined  b. is the average value of the two middle items  c. must be equal to the mean  d. is the average value of the two middle items when all items are arranged in ascending order  e. None of the above answers is correct</p>		<b>CO1</b>
<p>viii. In a sample of 800 students in a university, 160, or 20%, are Business majors. Based on the above information, the school's paper reported that "20% of all the students at the university are Business majors." This report is an example of  a. a sample  b. a population  c. statistical inference  d. descriptive statistics</p>		<b>CO1</b>



**SECTION-C**

**Each Question carries 10 Marks**

**10x3**

Q 6. The four variables shown in the data set below are set up to represent a fictitious study of gender, weight and fitness score. The variables include gender, ranking, weight and score. In this example, gender is coded as m or f (recoded as 1 or 2 for computations), weight is the participant's weight, score is a value that the participant scored in a fitness test and rank is their ranking based on that score

<b>Gender</b>	<b>Ranking</b>	<b>Weight</b>	<b>Score</b>
m	1	200	95
m	2	110	92
f	3	103	91
f	4	145	90
f	5	130	88
m	6	180	82
m	7	170	80
f	8	90	75
f	9	102	70
m	10	225	60
m	11	225	59
m	12	108	55
f	13	108	55
m	14	108	55
m	15	167	50

**CO3**

EACH OF THE VARIABLES IS EXAMINED IN THE CHART BELOW:

**Statistics**

			GENDER	RANKING	SCORE	WEIGHT
N	Valid	Statistic	15	15	15	15
	Missing	Statistic	0	0	0	0
Mean	Statistic		1.40	8.0000	73.1333	144.7333
	Std. Error		.13	1.1547	4.1928	12.0224
Median	Statistic		1.00	8.0000	75.0000	130.0000
Mode	Statistic		1	1.00 <sup>a</sup>	55.00	108.00
Std. Deviation	Statistic		.51	4.4721	16.2387	46.5625
Variance	Statistic		.26	20.0000	263.6952	2168.0667
Skewness	Statistic		.455	.000	-.085	.625
	Std. Error		.580	.580	.580	.580
Kurtosis	Statistic		-2.094	-1.200	-1.753	-1.037
	Std. Error		1.121	1.121	1.121	1.121
Range	Statistic		1	14.00	45.00	135.00
Minimum	Statistic		1	1.00	50.00	90.00
Maximum	Statistic		2	15.00	95.00	225.00

a. Multiple modes exist. The smallest value is shown

Answer the following questions:

- (i) What type of data does gender represent?
- (ii) Is this data set skewed in each case? If so, in which direction?
- (iii) What about kurtosis in each case?

Q 7. At the beginning of the 2019-20 academic year the number of years the full-time teaching faculty had been at Southwestern were:

13, 5, 20, 1, 8, 0, 3, 9, 31, 8, 2, 16, 1, 3, 19, 9, 0, 6, 8, 0, 3, 10, 18, 24, 5, 11, 15, 4, 4, 4, 36, 5, 4, 5, 3, 0, 3, 9, 17, 0, 13, 4, 15, 8, 5, 20, 19, 24, 6, 6, 9, 0, 37

- a. What is the mean?
- b. What is the median?
- c. Which is a better measure of the center of the data set? Why?

Q 8. Calculate the rank correlation between the marks obtained by 10 students in internal (X) and end term (Y) examination in QM.

X	40	37	40	70	85	40	32	60	72	85
Y	60	45	60	72	37	60	45	73	49	60

**CO3**

**CO3**

**SECTION-D**

	<b>Each Question carries 15 Marks</b>	<b>(15x2)</b>																					
Q 9.	<p>A study was made by a retail merchant to determine the relation between weekly advertising expenditure and sales. The following data were recorded:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Adv. Cost</td> <td style="padding: 2px;">5</td> <td style="padding: 2px;">4</td> <td style="padding: 2px;">8</td> <td style="padding: 2px;">7</td> <td style="padding: 2px;">3</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">6</td> <td style="padding: 2px;">5</td> </tr> <tr> <td style="padding: 2px;">Sales</td> <td style="padding: 2px;">10</td> <td style="padding: 2px;">8</td> <td style="padding: 2px;">12</td> <td style="padding: 2px;">11</td> <td style="padding: 2px;">6</td> <td style="padding: 2px;">6</td> <td style="padding: 2px;">10</td> <td style="padding: 2px;">6</td> <td style="padding: 2px;">8</td> </tr> </table> <p>(i) Plot scatter diagram. What does the scatter diagram indicate about the relationship between adv. cost and sales?</p> <p>(ii) Find the regression line to predict weekly sales from adv. cost.</p> <p>(iii) Estimate the weekly sales when adv. cost is 12.</p>	Adv. Cost	5	4	8	7	3	0	2	6	5	Sales	10	8	12	11	6	6	10	6	8	<b>CO4</b>	
Adv. Cost	5	4	8	7	3	0	2	6	5														
Sales	10	8	12	11	6	6	10	6	8														
Q 10.	<p>Construct a discrete frequency distribution and relative frequency distribution table. Also construct continuous frequency distribution table with suitable class interval size of marks obtained by 50 students of a class are given below:                  23, 50, 38, 42, 63, 75, 12, 33, 26, 39, 35, 47, 43, 52, 56, 59, 64, 77, 15, 21, 51, 54, 72, 68, 36, 65, 52, 60, 27, 34, 47, 48, 55, 58, 59, 62, 51, 48, 50, 41, 57, 65, 54, 43, 56, 44, 30, 46, 67, 53</p>	<b>CO4</b>																					