

**Assignment NO. 1 week1-week4**

**Student Full Name:** \_\_\_\_\_ .

**Student ID:** \_\_\_\_\_ .

**CRN No:** \_\_\_\_\_ .

**Branch:** \_\_\_\_\_ .

**STATISTICS  
(STAT-101)**

Day: Monday  
Date: 10.10. 2016

**Total Points**

**True/False**      \_\_\_\_/6

**MCQ**                \_\_\_\_/6

**Short Answer**    \_\_\_\_/18

**Total**                \_\_\_\_/30

# STATISTICS (STAT-101)

Marks- 30

Answer all the Questions on the same question paper.

## **Section-I**

*State whether the following statements are True or False. (6 marks, 1 Mark Each)*

1. The outliers are the values that lie very far away from the vast majority of the other values. **TRUE**
2. Systematic Sampling is Sampling in which data is obtained by selecting every kth object. **TRUE**
3. If the mode  $\neq$  median  $\neq$  mean, the distribution will be symmetric. **FALSE**
4. The value of the mean is not affected by one or more outliers. **FALSE**
5. The second quartile value is equal to the median. **TRUE**
6. A scatter diagram is a convenient way to display graphically the relationship between two variables. **TRUE**

## **Section-II**

**(Multiple Choice Questions)**

*(6 marks, 1 Mark Each)*

- 1- Statistics is the science of
  - a) Planning studies and experiments
  - b) Interpreting the data
  - c) Drawing conclusion on the basis of data
  - d) **All the above**
2. The relative frequency of a class is computed by
  - a) Dividing the midpoint of the class by the sample size.
  - b) Dividing the frequency of the class by the midpoint.
  - c) Dividing the sample size by the frequency of the class.
  - d) **Dividing the frequency of the class by the sample size.**

3. The difference between two consecutive lower class limit (or two consecutive lower class boundaries) in a frequency distribution is called
- a) Class boundary
  - b) Class mid-point
  - c) **Class width**
  - d) None
4. A distribution of data that is the left half of its histogram is roughly a mirror image of its right half called
- a) Left skewed
  - b) Right skewed
  - c) **Symmetric**
  - d) None
5. The standard deviation for the sample of data: 22, 26, 22 and 24 is
- a) **1.915**
  - b) 1.942
  - c) 1.987
  - d) 2.011
6. The three quartiles are  $Q_1 = 13.0$ ,  $Q_2 = 14.0$  and  $Q_3 = 15.5$ , the inter quartile range
- a) 0.5
  - b) 1.0
  - c) 1.5
  - d) **2.5**

### **Section –III**

**Answer the following Essay Type Questions**

(18 marks, 3 Mark Each)

1. The marks of a sample of 20 in a statistics test that had a maximum possible marks 100 are given below:

96, 90, 82, 40, 47, 49, 55, 56, 65, 66, 66, 71, 73, 75, 75, 78, 75, 78, 80, 81

Find the mean, mode, median and variance.

Solution : Mean =  $(\sum x)/n = 69.9$

Mode =75 (75 appear maximum number of time in the given data set)

Median =  $(73 +75)/2 = 74$  ( Since, the number of observation is even. Therefore median will be average of 10<sup>th</sup> and 11<sup>th</sup> term after arranging the observations in ascending or descending order)

Variance =  $s^2 = \frac{\sum(x-(x_{bar}))^2}{n-1} = 210.5$

2. Construct the frequency distribution and cumulative relative frequency table for the following data with 6 classes:

60, 90, 76, 81,59, 40, 48, 61, 57, 78, 86, 65, 63, 54, 68, 93, 71, 78, 79, 67,75, 87, 76, 74, 86, 57, 62, 95, 80, 70.

Solution: Number of Classes = K = 6

Minimum value =40

Maximum value= 95

Range= Maximum value – minimum value= 95-40= 55

Class width= Range/k =  $9.17 \cong 10$

Class interval	Frequency	Relative frequency	Cumulative relative frequency
40- 49	2	0.07	0.07
50- 59	4	0.13	0.20
60- 69	7	0.23	0.43
70- 79	9	0.3	0.73
80- 89	5	0.17	0.90
90- 99	3	0.1	1.00

3. Calculate the arithmetic mean of the marks from the following table:

Marks	No. of students
0 - 10	12
10- 20	18
20- 30	27
30- 40	20
40- 50	17
50- 60	16

Solution:

Marks	No. of students (f)	Mid value (x)	f.x
0 - 10	12	5	60
10- 20	18	15	270
20- 30	27	25	675
30- 40	20	35	700
40- 50	17	45	765
50- 60	16	55	880
<b>Total</b>	<b>110</b>		<b>3350</b>

Arithmetic mean =  $\bar{x} = \frac{\sum f.x}{\sum f} = \frac{3350}{110} = 30.5$

4. Construct a stem-and Leaf of the following data;  
73, 81, 75, 71, 75, 65, 78, 40, 66, 80, 90, 82, 75, 55, 66. 44, 33, 12, 27, 42.

Solution:

Steam	Leaf
1	2
2	7
3	3
4	0 2 4
5	5
6	5 6 6
7	1 3 5 5 5 8
8	0 1 2
9	0

5. An analysis of monthly wages paid to the worker in two firm A and B belong to the Same industry gives the following results:

	Firm A	Firm B
Number of workers	500	600
Average monthly wage	SR. 186.00	SR. 175.00
Variance of distribution of wages	81	100

In which firm, A or B is there greater variability in individual wages?

Solution: Variance of distribution of wages in firm A:  $\sigma_A^2=81 \rightarrow \sigma_A = \sqrt{81} = 9$   
Average monthly wages workers for firm A =  $\mu_A = \text{SR. } 186$

Variance of distribution of wages in firm B:  $\sigma_B^2= 100 \rightarrow \sigma_B = \sqrt{100} =10$   
Average monthly wages workers for firm B =  $\mu_B = \text{SR. } 175$

Coefficient of variation of wage for form A =  $\frac{\sigma_A}{\mu_A} \cdot 100 \% = 4.84 \%$

Coefficient of variation of wage for form B =  $\frac{\sigma_B}{\mu_B} \cdot 100 \% = 5.71 \%$

Since, Coefficient of variation for form B is greater than coefficient of variation for firm A. So, firm B has greater variability in industrial wages.

6. Construct histogram of the following frequency table

## Frequency Tables

Hours of Sleep	Frequency
3 - 4 hrs	1
4 - 5 hrs	3
5 - 6 hrs	6
6 - 7 hrs	14
7 - 8 hrs	16
8 - 9 hrs	5
9 - 10 hrs	3
10 - 11 hrs	2

**Answer:**

## Histogram (Frequency)

