**ISLAMABAD MODEL COLLEGE FOR GIRLS F-6/2,ISLAMABAD**

**Assignment #3 BSM-II (2nd Semester )Spring 2022**

**Probability & Statistics ST-101**

**Time Allowed: 3 hr Total Marks: 50**

**Note : Attempt any 5 questions**

**Q.1**

1. Differentiate between:
   1. Biased and unbiased errors
   2. Class Boundaries and Class Limits
   3. Symmetrical and Skewed Distribution

(b) Construct a stem and leaf display for the following observations

96 93 88 117 127 95 113 96 108 139

155 103 112 112 135 132 111 125 104 106

125 143 142 94 107 125 139 134 118 136

1. Which class has 50% observations below it?
2. Which class occurred most frequently? **(6,4)**

**Q.2**

1. Write down the properties of Arithmetic Mean.
2. Consider a sample with data 120.5, 120.9, 120.3, 121.3, 120.4, 120.2, 120.1, 120.5, 120.7, 121.1, 120.9, 120.8. Construct Box Plot for the data.
3. In a company having 80 employees, 60 earn Rs 3 per hr and 20 earn Rs 2 per hr.
4. Determine the mean earning per hr.
5. Do you consider this mean hourly age to be typical? **(4,4,2)**

**Q.3**

(a) The following sums have been obtained from a frequency distribution of variable X

after making the substitution X= 10+ 5u.

∑f=125, ∑fu= -45 , ∑fu²=306 , ∑fu³= -242

Calculate measure of skewness and interpret the result.

(b) For the data given below, Calculate (i) 65th Percentile (ii) Mode

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
| f | 4 | 8 | 15 | 22 | 31 | 11 | 5 |

**Q.4**

(a) Differentiate between Absolute and Relative Dispersion

(b) Two candidates X and Y obtained the following scores in 8 papers at BA (Hons)

examination. Which of the candidate showed a more consistent performance?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Paper | I | II | III | IV | V | VI | VII | VIII |
| X | 58 | 49 | 76 | 80 | 50 | 72 | 61 | 59 |
| Y | 42 | 41 | 86 | 72 | 75 | 69 | 57 | 49 |

**Q.5**

(a) Define the following

(i) Random Experiment (ii) Sample Space iii) Mutually Exclusive Events

(b) How many 4 digit numbers can be formed with 10 digits 0,1,2,3,…..,9 if

(i) repitions are allowed

(ii) repitions are not allowed

(iii)the last digit must be zero and repitions are not allowed. **(6,4)**

**Q.6**

(a)A bag contains 12 balls of which 3 are marked. If 5 balls drawn out together, what is

the probability that 3 of the marked balls are among them?

1. Of 12 eggs in a refrigerator, 3 are bad. From these, 4 eggs are chosen at random to

Make a cake. What is the probability that

1. Exactly one is bad
2. Atleast one is bad **(5,5)**