Max Marks: 10 Assignment # 1 Classes# BAI (3A &3B) , BSCS (5A)

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**Q1)** The data given below represents the ages at the time of deaths for 40 US vice presidents.

90, 72, 66, 76, 83, 74, 96, 98, 80, 67, 78, 78, 77, 73, 54, 55, 88, 70, 81, 60, 78,

51, 66, 66, 81, 68, 62, 57, 64, 79, 63, 71, 66, 70, 68, 60, 77, 71, 57, 85, and 70

(i) Construct a Stem and Leaf plot. **[2]**

(ii) Calculate a five number summary and then construct a box plot. **[8]**

(iii) Calculate standard deviation. **[3]**

(iv) Comment about shape and outliers. **[2]**

**Q2)(a)**Police plan to enforce speed limits by using radar traps at four diﬀerent locations within the city limits. The radar traps at each of the locations L1, L2, L3, and L4 will be operated 40%, 30%, 20%, and 30% of the time. If a person who is speeding on her way to work has probabilities of 0.2, 0.1, 0.5, and 0.2, respectively, of passing through these locations, what is the probability that she will receive speeding tickets. **[5]**

**Q2)(b)** The probabilities are 0.4, 0.2, 0.3, and 0.1, respectively, that a delegate to a certain convention arrived by air, bus, automobile, or train. What is the probability that among 9 delegates randomly selected at this convention, 3 arrived by air, 3 arrived by bus, 1 arrived by automobile, and 2 arrived by train? **[3]**

**Q2(c)** Find the probability that a person flipping a coin gets the first head on the fourth flip. **[2]**

**Q3) Answer the following questions and show the necessary steps.**

**(a)** In the programming class, there are nineteen males and thirteen females. Two students in succession are selected randomly from this class for a coding competition. Find the probability that the first student selected is male and the second is female. **[2]**

**(b)** How many three-digit numbers can be formed from the digits 0, 1, 2, 3, 4, 5, and 6 if repetition is allowed? How many of these are less than 330? **[2]**

**(d)** Consider the table given below that represents the level of education of 200 individuals. If an individual is selected at random, find the probability that **[3]**

**(i)** the individual is a male, given that the person has 14 years of education.

**(ii)** the person does not have 16 years of education, given that the person is a female.

**Q4) (a)** Application for an assembly job are required to take a test of manual dexterity. The times, is seconds, taken to complete the task by 19 applications were follows:

63, 229, 165, 77, 49, 74, 67, 59, 66, 102, 81, 72, 59, 74, 61, 82, 48, 70, 86. For these data find:

1. Mean absolute deviation from mean MAD(. [3]
2. Pearsonian’s Coefficient of Skewness [1]
3. Quartile coefficient of Skewness (Bowley’s Coefficient of Skewness). [1]
4. An outlier here is defined as any observation less than Q1 = 1.5 (Q3 – Q1) or greater than Q3 = 1.5 (Q3 + Q1,where Q1 is the lower quartile and Q3 is the upper quartile. [1]
5. Identify any outliers in the data. [0.5]
6. Illustrate the data by box and Whisker plot. If any, should each be denoted by a “ \* ” and should not be included in the Whisker, [1]

**Q5 (b)**The four moments about mean are calculated as:

1 = 0, 2 = 0.84, 3 = 0.36 & 4 = 1.24. Find the coefficient of Kurtosis β2 and Coefficient of Skewness β1.

Comment of the distribution. [3]

**Q6) Answer the following questions and show the necessary steps.**

**(a)** In the programming class, there are nineteen males and thirteen females. Two students in succession are selected randomly from this class for a coding competition. Find the probability that the first student selected is male and the second is female. **[2]**

**(b)** How many three-digit numbers can be formed from the digits 0, 1, 2, 3, 4, 5, and 6 if repetition is allowed? How many of these are less than 330? **[2]**

**(c)** Consider the table given below that represents the level of education of 200 individuals. If an individual is selected at random, find the probability that **[3]**

**(i)** the individual is a male, given that the person has 14 years of education.

|  |  |  |
| --- | --- | --- |
| **Male** | **Female** | **Education**  **(yrs.)** |
| 38 | 45 | 12 |
| 28 | 50 | 14 |
| 22 | 17 | 16 |

**(ii)** the person does not have 16 years of education, given that the person is a female.

**(d)** A family has three children. Find the probability that: **[4]**

**(i)** all are boys (**ii)** all are girls or all boys **(iii)** Exactly two boys or two girls

**(iv)** at least one child of each gender.

**(e)** There are 8 nurses and 5 physicians in a hospital unit; 7 nurses and 3 physicians are female. If a staff person is selected, determine the chance that the person is a nurse or male.**[2]**

**(f)** A newsagent sells three papers, the Jang, the Dawn, and the Business Recorder (BR). 70 customers buy the Jang, 60 the Dawn, and 50 the BR, 17 buy both the Jang & Dawn, 15 the Dawn & the BR, and 16 the BR & the Jang, while 3 customers buy all three papers. How many customers does he have? **[2]**