**PRACTICE QUESTIONS : September 2020 , B Com H Sem V DSE , Business Statistics**

**CENTRAL TENDENCY AND DISPERSION**

1. A sequence consists of 10 numbers arranged in descending order. The mean value of the sequence is 80 and standard deviation is 12. If 50 is added to each term, and then each term is divided by 2 to get a new series, find the new mean and standard deviation.
2. Explain the relationship between S.D, M.D, and Q.D. If the first quartile is 250 and semi-inter quartile range is 32 Assuming the distribution to be symmetrical, find the median.
3. Find median and mode for the following data on marks of 100 students in Mathematics.

|  |  |
| --- | --- |
| Marks | No of students |
| 0-10 | 2 |
| 10-20 | 12 |
| 20-30 | 11 |
| 30-40 | 15 |
| /40-50 | 25 |
| 50-60 | 10 |
| 60-70 | 7 |
| 70-80 | 4 |
| 80-90 | 9 |
| 90-100 | 5 |

1. **Standard deviation of monthly income of 150 women in a factory is Rs 400 and that of 850 men is Rs 350. It is given that average income of all employees taken together is Rs. 30,000 and average income of women is Rs 28000.**

**Calculate : (i) average income of men and (ii) combined standard deviation for all the employees.**

1. **Explain briefly properties of Arithmetic Mean (no proofs required).**
2. **A machine depreciates by 40% in value in first year, 25% in second year and 10% p.a in next three years, each percentage calculated on diminishing value. Calculate the average depreciation per annum in this period of five years.**
3. **In a 400 meter race, a participant showed following performance. Calculate his average speed**

|  |  |
| --- | --- |
| **Distance** | **Speed (metre per second)** |
| **First 100 metres** | **9.5** |
| **Next 200 metres** | **8** |
| **Last 100 metres** | **10** |

1. **For the following data calculate coefficient of quartile deviation :**

|  |  |
| --- | --- |
| **Class Interval** | **Frequency** |
| **10-20** | **12** |
| **20-30** | **45** |
| **30-40** | **34** |
| **40-50** | **13** |
| **50-60** | **56** |
| **60-70** | **50** |

**CORRELATION AND REGRESSION**

1. Data of monthly income and savings for eight employees in a company was collected. Assuming a linear relationship between the two variables, estimate the savings of a person having income of Rs 62000 per month.

|  |  |  |
| --- | --- | --- |
| S.No | Income RS ‘000 | Savings Rs ‘000 |
| 1 | 25 | 0.5 |
| 2 | 28 | 0.6 |
| 3 | 35 | 0.8 |
| 4 | 39 | 1.6 |
| 5 | 44 | 1.8 |
| 6 | 48 | 3 |
| 7 | 52 | 4.5 |
| 8 | 55 | 4.8 |

1. Two foreign tourists were told to rank different cities of India on the basis of their experience. Following ranks were obtained. Calculate the correlation between their liking for the cities:

|  |  |  |
| --- | --- | --- |
| City | Ranking by Tom | Ranking by John |
| Pune | 3 | 4 |
| Delhi | 2 | 6 |
| Chennai | 5 | 3 |
| Kanpur | 6 | 1 |
| Ahmedabad | 7 | 2 |
| Indore | 4 | 7 |
| Varanasi | 1 | 5 |

1. Two teachers assess the acting skills of eight students and rank them from 1(best ) to 8(worst) . Calculate a suitable correlation coefficient to show the level of agreement between the two teachers.

|  |  |  |
| --- | --- | --- |
| Student | Rank by Teacher A | Rank by Teacher B |
| A | 5 | 3 |
| B | 1 | 4 |
| C | 3 | 5 |
| D | 6 | 8 |
| E | 7 | 2 |
| F | 8 | 7 |
| G | 2 | 6 |
| H | 4 | 1 |

1. What is the difference between correlation and coefficient? .Write down the properties of correlation coefficients and regression coefficient.
2. From the following table find the missing values and calculate Karl Pearson’s coefficient of correlation between X and Y. It is given that Arithmetic means of X and Y are 6 and 8 respectively

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 6 | 2 | 10 | 4 | ? |
| Y | 9 | 11 | ? | 8 | 7 |

1. Two regression equations between variables X and Y are given as :

8X – 10Y + 66 = 0

40X - 18Y – 214 = 0

Variance of X = 9.

Find

i) Means of X and Y

ii) The predicted value of X when Y is 10

iii) The correlation coefficient of X and Y