**NMIMS Global Access**

**School for Continuing Education (NGA-SCE)**

**Course: Decision Science**

**Internal Assignment Applicable for December 2020 Examination**

1. The data of two variables X and Y is given below:

**TABLE BELOW**

|  |  |
| --- | --- |
| Y  | X  |
| **3**  | 45  |
| **4**  | 56  |
| **5**  | 54  |
| **6**  | 56  |
| **7**  | 57  |
| **6**  | 58  |
| **6**  | 67  |
| **6**  | 68  |
| **7**  | 76  |
| **7**  | 76  |
| **8**  | 78  |
| **9**  | 79  |
| **12**  | 80  |
| **13**  | 81  |
| **15**  | 84  |
| **17**  | 89  |

a. Calculate the correlation between X and Y

b. Apply the regression between X and Y (as dependent variable)

c. Estimate the R square

d. Predict Y when X = 50

**(10 Marks)**

Answer 1

A) Calculate the Correlation between X and Y

|  |  |  |
| --- | --- | --- |
| SUBJECT | Y | X |
| 1 | 3 | 45 |
| 2 | 4 | 56 |

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2. Following ungrouped data of Sales of a company (in millions) is available

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 52  | 33  | 70  | 95  | 57  | 61  |
| 57  | 64  | 54  | 94  | 38  | 61  |
| 50  | 39  | 94  | 63  | 59  | 31  |
| 68  | 88  | 93  | 48  | 82  | 82  |
| 74  | 70  | 92  | 76  | 98  | 91  |
| 32  | 33  | 31  | 75  | 54  | 48  |
| 36  | 64  | 63  | 66  | 92  | 98  |
| 36  | 54  | 71  | 86  | 84  | 55  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 91  | 34  | 64  | 67  | 89  | 78  |
| 97  | 92  | 53  | 56  | 68  | 55  |
| 93  | 42  | 51  | 77  | 36  | 93  |
| 44  | 66  | 63  | 33  | 68  | 79  |
| 83  | 53  | 86  | 76  | 35  | 40  |
| 55  | 41  | 36  | 39  | 42  | 96  |
| 60  | 53  | 38  | 51  | 95  | 56  |
| 48  | 69  | 49  | 33  | 95  | 37  |
| 83  | 62  | 96  | 34  | 85  | 32  |
| 39  | 59  | 77  | 62  | 35  | 34  |
| 54  | 89  | 36  | 45  | 83  | 34  |
| 39  | 61  | 88  | 86  | 55  | 33  |
| 69  | 54  | 30  | 38  | 79  | 77  |
| 95  | 34  | 38  | 91  | 80  | 90  |
| 88  | 45  | 95  | 71  | 80  | 43  |
| 61  | 40  | 31  | 61  | 58  | 53  |
| 91  | 63  | 60  | 94  | 98  | 53  |
| 50  | 34  | 75  | 74  | 90  | 98  |

a. Make the frequency distribution table with appropiate class interval, frequency,

cumulative frequency.

b. Calculate the mean, median, mode and quartiles of grouped data.

c. Calculate the standard deviation, variance and range

d. Make the following diagrams: Histogram, Frequency Polygon, Ogive

**(10 Marks)**

Answer 2 a)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 52 | 33 | 70 | 95 | 57 | 61 |
| 57 | 64 | 54 | 94 | 38 | 61 |
| 50 | 39 | 94 | 63 | 59 | 31 |
| 68 | 88 | 93 | 48 | 82 | 82 |
| 74 | 70 | 92 | 76 | 98 | 91 |
| 32 | 33 | 31 | 75 | 54 | 48 |

**3.a. For a certain type of computers, the length of time between charges of the battery is normally distributed with a mean of 50 hours and a standard deviation of 15 hours. Mr Y owns one of these computers and wants to know the probability that the length of time will be between 50 and 70 hours. (5 Marks**

**3.b. The length of life of an instrument produced by a machine has a normal distribution with a mean of 12 months and standard deviation of 2 months. Find the probability that an instrument produced by this machine will last (a) Less than 7 months (b) Between 7 and 12 months (5 Marks)**

Answer 3

a) Mean =50 or µ =50

S.D= 15 or σ=15

 Probability between 50 < x < 70

Formula