PATAN MULTIPLE CAMPUS

Practical No. 5: Correlation and Regression

Roll No. 1/080 Date: 2081 – 05 - 20

Program: BIT Semester: 2nd

Subject: Basic Statistics Section: B

Question: The following observations of nutrition and child mortality are as follows:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nutrition | 12.1 | 9.1 | 26 | 6.4 | 9.5 | 18.5 | 22.8 | 17.4 | 13.9 | 3.2 |
| Child mortality | 9.5 | 9.2 | 11.8 | 6.4 | 7.3 | 20.3 | 24.4 | 21.1 | 10.7 | 3.5 |

(i) Calculate Karl Pearson's correlation coefficient and test its significance and find the limits of population correlation coefficient. Find coefficient of determination and interpret it.

(ii) Find the regression equation of child mortality on nutrition. Estimate the child mortality when nutrition is 20.5. Interpret the slope. Find coefficients of determination.

Working Expression: [By hand written]

Calculation: [By using software]

(i) Data

(ii) Syntax

(iii) Output

Results: [By hand written]

10. The following observations of nutrition and child mortality are as follows:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nutrition | 12.1 | 9.1 | 26 | 6.4 | 9.5 | 18.5 | 22.8 | 17.4 | 13.9 | 3.2 |
| Child mortality | 9.5 | 9.2 | 11.8 | 6.4 | 7.3 | 20.3 | 24.4 | 21.1 | 10.7 | 3.5 |

(i) Calculate Karl Pearson's correlation coefficient and test its significance and find the limits of population correlation coefficient. Find coefficient of determination and interpret it.

(ii) Find the regression equation of child mortality on nutrition. Estimate the child mortality when nutrition is 20.5. Interpret the slope. Find coefficients of determination.

11. The following data gives the age and blood pressure (BP) of 10 sports persons.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | A | B | C | D | E | F | G | H | I | J |
| Age | 42 | 36 | 55 | 58 | 35 | 65 | 60 | 50 | 48 | 51 |
| Blood pressure | 98 | 93 | 110 | 85 | 105 | 108 | 82 | 102 | 118 | 99 |

(i) Calculate Karl Pearson's correlation coefficient and test its significance and find the limits of population correlation coefficient. Find coefficient of determination and interpret it.

(ii) Find the regression equation of child blood pressure on age. Estimate the blood pressure when age is 50.

12. Find correlation and regression of the following data and also find coefficient of determination.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Marks of Mathematics | 14 | 20 | 15 | 13 | 15 | 20 | 25 |
| Marks of Statistics | 55 | 50 | 45 | 60 | 55 | 58 | 62 |

Also find the regression equation of marks of statistics on marks of mathematics. Estimate the marks of Statistics when mark of Mathematics is 50.