SRM Institute of Science and Technology

College of Engineering and Technology

Kattankulathur-603 203

Department of Mathematics

21MAB301T-Probability and Statistics

<table>
<tr><th>Sl.No.</th><th>Tutorial Sheet - 2</th><th>Answer</th></tr>
<tr><td>1</td><td>From the following data between output and cost of an automobile factory :
<table>
<tr><td>Output of the car (in thousands)</td><td>3.5</td><td>4.2</td><td>5.6</td><td>6.5</td><td>7.0</td><td>8.2</td><td>8.8</td><td>9.0</td><td>9.7</td><td>10.0</td></tr>
<tr><td>Cost of cars (in millions)</td><td>9.8</td><td>9.0</td><td>8.8</td><td>8.4</td><td>8.3</td><td>8.2</td><td>8.2</td><td>8.0</td><td>8.0</td><td>8.1</td></tr>
</table>
a. Regression line of Cost of cars on Output of the car
b. Regression line of Output of the car on Cost of cars
c. If Output of the car is two thousands, then find the Cost of cars
d. If Cost of cars is ten million, then find the Output of the car</td><td>$y = -0.23 * x + 10.51$
$x = -3.68 * y + 38.46$

10.05 and
1.66</td></tr>
<tr><td>2</td><td>From the following data
<table>
<tr><td>X</td><td>1</td><td>3</td><td>5</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>Y</td><td>3</td><td>4</td><td>8</td><td>10</td><td>12</td><td>11</td></tr>
</table>
a. Regression line of Y on X
b. Regression line of X on Y
c. If x = 1.2, then find the value of y
d. If y = 2.5, then find the value of x</td><td>$y = 1.01 * x + 1.94$
$x = 0.93 * y - 1.44$
$y = 3.152$
$x = 0.885$</td></tr>
<tr><td>3</td><td>The following data pertains to the marks in subjects A and B in a certain examination; Mean marks in A = 39.5, Mean marks in B = 47.5, standard deviation of marks in A = 10.8 and standard deviation of marks in B = 16.8. Coefficient of correlation between marks in A and marks in B is 0.42. Give the estimate of marks in B for a candidate who secured 51 marks in A.</td><td>$y = 0.65 * x + 21.825$
$y = 54.975$</td></tr>
<tr><td>4</td><td>For two variables X and Y, the equations of the regression lines are 9Y – X – 288 = 0 and X – 4Y + 38 = 0. Calculate the following:
a. Mean value of X and Y
b. Coefficient of correlation between X and Y</td><td>Mean of X = 162 and Mean of Y = 50
$b_{yx} = 1/9$ and $b_{xy} = 4$

Coefficient of correlation between X and Y = 0.67</td></tr>
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