BRAC UNIVERSITY
Inspiring Excellence

STA201 Assignment 2

Correlation & Regression

1. The demand and price of a product is given in the following table:

Price (Tk.)	23	35	40	45	44	50	55	72
Demand (kg)	12.5	8.6	9.4	7.5	5	4.5	4	2

a. Find the relationship between demand and price using a scatter diagram and comment (interpret).
b. Find correlation coefficient and comment.
c. Fit a least square regression equation (line) of demand on price and comment.
d. What will be the demand when the price is Tk. 38 and Tk. 15?
e. Find coefficient of determination (how well the regression line is fitted).

2. Years of Work Experience and number of Job Offers of 10 job-seekers were as follows:

Work Exp.	4	2	5	3	7	12	2	5	4	9
No. of Offers	7	1	8	4	13	19	3	11	9	15

a. Fit the regression equation of No. of Job Offers on Years of Work Experience.
b. What will be the predicted number of offers for an applicant with 6 years of experience?
c. Verify the relationship between the number of job offers and years of work experience using at least two relevant methods.

Probability

3. In a simultaneous throw of a pair of fair 6-sided dice, find the probability of getting:
a. A sum of 10
b. A doublet (two dice landing on the same value)
c. A doublet of prime numbers
d. A doublet of even numbers
e. A sum greater than 6
f. An even number on the first die
g. An odd number on one and a multiple of 2 on the other

4. A bag contains 30 balls numbered 1 through 30. Suppose drawing an even numbered ball is considered a ‘Success’. Two balls are drawn from the bag with replacement. Find the probability of getting:
a. Two successes
b. exactly one success
c. at least one success
d. no successes

5. A secondary school is offering two extracurricular classes, one in Photography and the other in Swimming. These classes are open to all of the 250 students in the school. Suppose there are 48 students in the Photography class, 34 in the Swimming class, and 12 who are in both classes. If a student is randomly chosen, what is the probability that this student is not enrolled in any one of these classes?

6. Assume that the chances of a patient suffering from high blood pressure is 60%. It is also assumed that a course of meditation reduces the risk of high blood pressure by 45% and prescription of certain drugs reduces its chances by 55%. At a time, a patient can choose any one of the two options with equal probabilities. It is given that after going through one of the two options, the patient selected at random does not suffer from high blood pressure. Find the probability that the patient chose a course of meditation?

7. Bag A contains 6 red and 7 black balls and Bag B contains 9 red and 6 black balls. One ball is transferred from Bag A to Bag B and then a ball is drawn from Bag B. The ball so drawn is found to be black in color. Find the probability that the transferred ball was red.