Probability and Statistics
MATH 121
Assignment – 10 marks

KING FAISAL UNIVERSITY
COLLEGE OF SCIENCE
DEPARTMENT OF MATHEMATICS & STATISTICS

Deadline for submitting the assignment is: 13-12- 2023.

Name: ----------

Answer the following questions:

Q.1. Marks [5]

Consider the following joint probability mass function.

x	y	$f_{XY}(x, y)$
–1.0	–2	1/8
–0.5	–1	1/4
0.5	1	1/2
1.0	2	1/8

Determine the following

(a) Marginal probability distribution of X.
(b) Marginal probability distribution of Y.
(c) The correlation coefficient between X and Y.

Q.2. Marks [5]

Summary of quantities are as follows

$n = 20$

$\sum y_i = 12.75,$

$\sum x_i = 1478, \quad \sum x_i^2 = 143215.8, \quad and \quad \sum x_i y_i = 1083.67$

Assume that the two variables are related according to the simple linear regression model.

(a) Calculate the least squares estimates of the slope and intercept.
(b) Use the equation of the fitted line to predict y when x= 85
(c) Suppose that the observed value of y at x =90 is y=70. Calculate the value of the corresponding residual.