



Name: _____ ID: _____ group: _____ Serial: _____

Question One	Question Two	Question Three	Total

Question One: (20 Marks)

A) For the following frequency distribution (16 Marks)

Class	f	x	C.F.	R.F.	$x - \bar{x}$	$f(x - \bar{x})$	$f(x - \bar{x})^2$	$f(x - \bar{x})^3$	$f(x - \bar{x})^4$
0-10	1								
10-20	3								
20-30	5								
30-40	4								
40-50	2								
Total									

1- Complete the table(2 Marks)

2- Calculate the following Statistics (12 Marks)

The mean

The median

The Variance

The first 4 moments around the mean

The Kurtosis

The Skewness

8- Draw the histogram for this distribution(2 Marks)

B) A sample of 6 children was selected, data about their age in years and weight in kilograms was recorded as shown in the following table . (4 Marks)

Serial no.	Age (X)	Weight (Y)			
1	7	12			
2	6	8			
3	8	12			
4	5	10			
5	6	11			
6	9	13			
Total	41	66			

1- Find the regression equation

2- what is the predicted weight when age is 8.5 years

Question Two (11 Marks)

A) Consider the experiment of rolling two fair dice once. Consider the following events:
A:sum of the two faces showing up is 9, B sum of the two faces showing up is at least 6.

Answer the following: (5 Marks)

i) Describe the sample space

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ii) Find $P(A)$

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iii) Find $P(B)$

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iv) Find $P(A|B)$.

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v) Find $P(B|A)$

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B) The sample space for a given experiment has six possible outcomes with probabilities as given in the table below (consider all the Events are independent and mutually exclusive).

events	E1	E2	E3	E4	E5	E6
Probabilities	0.15	0.10	0.05	0.20	0.35	0.15

Find the probability of each of the following events: **(6 Marks)**

i) $A := \{E2, E4, E5\}$

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iv) $A \cap B$

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ii) $B := \{E1, E3, E4, E5\}$

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v) $A \cap B'$

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iii) $C := \{E2, E6\}$

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vi) $A' \cup C$

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Question Three (9 Marks)

Select two of the following (Each 4.5 Marks)

A) A disease infects one out of every 1000 people. A test for this disease exists, such that if a person is infected, the test is positive 99%. The test also produces some false positives: 2% of uninfected people are also test positive.

B) A survey of job satisfaction of teachers was taken, giving the following results,

Define, C: teacher teaches college, S: teacher being satisfied

i) Find the following probabilities

		Job Satisfaction		
		Satisfied	Unsatisfied	Total
L E V E L	College	0.095	0.055	0.150
	High School	0.288	0.220	0.508
	Elementary	0.162	0.180	0.342
	Total	0.545	0.455	1.000

ii) Are S and C independent or dependent

c) A factory has three Machinery, The first produces 450, the second 350 and the third 200. The defective products from the first machine is 1%, the second 2% and the third 3%.

Define the following events:

A_1 : First Machine product A_2 : Second Machine product A_3 :Third Machine product

i) find the following Probabilities

ii) A product is selected and it is defective what is the probability that it is from second machine