



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2010/2011

INSTITUTE OF OPEN LEARNING

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN

INFORMATION TECHNOLOGY

SIT 110: INTRODUCTION TO STATISTICS

DATE: SATURDAY, 5TH FEBRUARY 2011

TIME: 4.30 P.M. - 6.30 P.M.

Question One (a) (30 marks compulsory)

(i) Explain briefly 5 applications of statistics.

(5marks)

(ii) What are the limitations of statistics (Give 3 examples)

(3marks)

b) (i) Show that

$$\binom{n}{k} + \binom{n}{k+1} = \binom{n+1}{k+1}$$

(5 marks)

(ii) Calculate the mean, and median of the following data

Variable	15	25	35	45	55	65	75	85
Frequency	5	9	13	21	20	15	8	3

(6marks)

(iii) The annual salaries of employees are given in the following table

Salary (Ksh 000)	45	50	55	60	65	70	75	80
Number of persons	3	5	8	7	9	7	4	7

Calculate the standard deviation of the salaries.

(5 marks)

(c) An unbiased coin is tossed 3 times. Obtain

(i) The sample space

(2 marks)

(ii) The probability of obtaining 3 heads

(2 marks)

(ii) The probability of obtaining 2 tails

(2 marks)

Question 2 (20 marks)

a) Marks obtained in a computer science course were distributed as follows:

Marks	0-10	10-20	20-30	30-40	50-60	60-70
No. of Students	5	40	20	0	5	30

Use the data to calculate

- (i) The first, second and third Quartile (9 marks)
- (ii) Calculate the inter- Quartile range (1 mark)

- (b) Use the data in Q2 (a) to calculate
 - (i) the mean (3 marks)
 - (ii) mean deviation about median (3 marks)
 - (iii) standard deviation (4 marks)

Question 3

Use the data below:-

Calculate the first four moments about the mean. (10 marks)

Variable	2	3	4	5	6
Frequency	1	3	7	3	1

- (b) Calculate the Karl correlation and Spearmann rank correlation using the following data.

X	Y
10	30
20	50
30	60
40	80
50	100
60	110
70	130

Question 4

(10 marks)

Use the following data to (i) calculate the regression equation of X on Y and Y on X (14 marks)

X	35	25	29	31	27	24	33	36
Y	23	27	26	21	24	20	29	30

(ii) Obtain the value of X when Y=20 and the value of Y when X =22

Question 5

(a) Three unbiased dice were rolled. Obtain the sample space (10 marks)

(b) A factory has two machines A and B. Machine A produces 30% of the items output and machine B, 70% of the items. Further, 5% of the items produce by machine A are defective and only 1% produced by machine B are defective. If a defective item is drawn at random, what is the probability it was produced by:-

(i) Machine A (5 marks)

(ii) Machine B (5 marks)