



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

INSTITUTIONAL BASED PROGRAMME

DIPLOMA IN BUILDING & CIVIL ENGINEERING

AHS 2202: STATISTICS

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:

This paper consists of **FIVE** questions

- *Answer Booklet*

Answer question **ONE (COMPULSORY)** in **SECTION A** and any other **TWO** questions in **SECTION B**

Marks are indicated for each part of the question

This paper consists of **FOUR** printed pages

SECTION A (Answer all questions in this section - 30 Marks)

Question One

- a) Define statistics, why it is important (2 marks)
- b) Two engineers Kamau and Gitonga are asked to give marks for the quality of varies project A, B, C, D and E. Their scores are as tabled below:

Project	Kamau	Gitonga
A	64	69
B	71	66
C	57	61
D	36	41
E	51	51

Do the two engineers agree? (8 marks)

- c) Sample of 57 migratory salmon from a single young cohort is weighed. Salmon masses (g) are presented in the table below

70	82	43	28	49	19	51	14	66	27
27	28	38	24	28	44	26	77	48	43
71	26	27	23	56	14	28	53	23	29
26	40	57	31	26	48	38	29	42	52
53	26	30	30	48	28	14	40	43	45
35	70	31	34	25	27	49			

Present the data in a frequency distribution table, histogram, and frequency polygon and calculate the measures of central tendency. Comment on the shape of the distribution (20 marks)

SECTION A (Answer all questions in this section - 20 Marks each)

Question Two

- a) Define the following terms as used in statistics (5 marks)
- (i) Significances level
 - (ii) Acceptance region
- b) 55% of all recorded birth are males a random selection of 5 birth certificates is done. Find the probability that exactly 3 birth certificates are boys. (5 marks)

c) Masses of igneous rocks (kg) selected for construction are as follows:

68	79	60	48
69	23	27	23
24	36	57	31
30	22	30	28
32	65	31	32
49	63	30	25
50	41	33	20

- (i) Prepare a distribution table
- (ii) Draw a frequency polygon
- (iii) Calculate standard deviation (10 marks)

Question Three

a) Define the following terms as used in statistics.

- (i) Confidence interval
- (ii) Null hypothesis
- (iii) Rejection region
- (iv) Type 1 error (8 marks)

b) Two surveyors make judgment on quality of a selected type of topographical map. Their scores for maps from five locations are as follows:

Location	Surveyor A	Surveyor B
1	50	50
2	40	35
3	60	56
4	65	70
5	68	63

Determine if the two surveyors agree (12 marks)

Question Four

A study was conducted to determine if two technical drawing methods had improved a student's performance. The answer of correct answers out of the question used in the study are as follows:

Method1	6	9	8	4	7	5
Method 2	3	4	5	7	6	4

Test improvement in the performance at 0.01 significant level (20 marks)

Question Five

- a) Distinguish student 't' distribution from the normal distribution (5 marks)
- b) Studies show that 30% of hotel owners leave their stores unlocked. 5% of hotels whose stores are unlocked are unbroken into. Find the probability that hotels that are left unlocked are broken into. (5 marks)
- c) Heights for plants grown in a research station are as follows:
36, 34, 31, 33, 29, 27, 36, 25, 33, 24 (mm).
Determine 95% confidence interval for the population height (10 marks)