THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

((A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR BACHELOR OF ENGINEERING IN CIVIL ENGINEERING

AMA 2206: STATISTICS

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 2012
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*
- *Scientific Calculator*

This paper consists of **FIVE** questions. Answer any **THREE** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (Compulsory - 30 marks)

a) Briefly explain the following terms as applied in statistics.
- **i)** Mean
- **ii)** Histogram **(5 marks)**

b) Blocks for masonry work are weighed in kg and results obtained as follows:

49	27	25	34	31	70	35	40	42
14	28	48	30	30	26	53	29	23
38	48	26	31	57	40	26	53	48

28	14	56	23	27	26	71	77	66
26	44	28	24	38	28	27	14	45

i) Present the data in a frequency distribution table.
ii) Sketch a Histogram
iii) Calculate the standard deviation
iv) Comment on the distribution based on the results obtained in (b) (ii) **(20 marks)**

c) Two trainees allocated marks for a statistics test and the result obtained were:

Test Number	**Trainee**	
	SIBUOR	**MWENGA**
1	71	66
2	57	61
3	64	69
4	36	41
5	51	51

Determine statistically if the **TWO** trainee agrees in their marks allocation **(5 marks)**

Question Two (20 marks)

a) Distinguish a normal distribution from a student't' distribution. (4 marks)

b) It was established in a certain town that 20% of fish traders have their stalls vandalized whenever the stalls are not guarded. Determine the probability that vandalism will occur when stalls are not guarded. **(4 marks)**

c) Frequency distributions for an experimental result are as follows:

24 33 25 36 27 29 33 31 34 36

Determine 98% confidence internal for the distribution. **(12 marks)**

Question Three (20 marks)

a) With the aid of a sketch explain the terms:
i) Acceptance level
ii) Significance level **(5 marks)**

b) A bag contains several black and white spherical objects 35% of the objects are black in colour. Random selections of 5 objects are drawn from the bag. Find the probability that exactly 3 objects are black. **(5 marks)**

c) The masses in kg for 24 construction materials of a certain brand are:-

50	41	33	20	49	6.3	30	25	32	65
31	32	30	22	30	28	24	36	57	31
68	79	60	48	25					

i) Present the data in frequency distribution table
ii) Sketch a frequency polygon
iii) Calculate the standard deviation **(10 marks)**

Question Four (20 marks)

Scores for two brands of a new drink are made on six occasions by an analyst:

Brand A	5	7	4	8	9	6
Brand B	4	6	7	5	4	3

It is believed that improvement in quality between the two brands occurred due to new technology.

Test is believed at 1% significance level. **(20 marks)**

Question Five (20 marks)

a) Explain the following terms as applied in test of hypothesis.
i) Null hypothesis
ii) Type 1 error **(5 marks)**

b) Two quality inspectors make judgement on roofing material produced by a new manufacturer. The scores for their judgement are as follows:

Number	Inspector A	Inspector B
1	50	50
2	40	35
3	60	56
4	65	70
5	67	62

Determine judgement between the two inspectors agree. **(15 marks)**