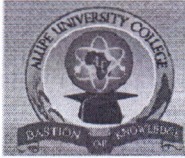**ALUPE UNIVERSITY COLLEGE**

...Bastion of Knowledge...

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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER EXAMINATION

For examiner's Use Only

Question	I.E	E.E
CAT		
EXAM		
TOTAL		

FOR THE DEGREE OF BACHELOR

OF SCIENCE IN APPLIED STATISTICS

WITH COMPUTING

SCHOOL: SCIENCE

COURSE CODE: STA 111

COURSE TITLE: INTRODUCTION TO STATISTICS

AND PROBABILITY

DATE: 13th December, 2017 **TIME:** 9.00am-12.00pm

INSTRUCTION TO CANDIDATES : SEE INSIDE

THIS PAPER CONSISTS OF 22 PRINTED PAGES   **PLEASE TURN OVER**

Insert the numbers of the questions you have answered in the order done

Student Admission No…………………………….Exam Card No…………………….Signature…………

INSTRUCTIONS TO CANDIDATES

1. Write your **Admission Number**, **Exam Card Number** and **Sign** in the spaces provided at the bottom of each page of the Examination Booklet. DO NOT write your name anywhere in this booklet.

2. Write on both sides of the pages.

3. All rough work must be done in the Answer sheets and crossed through.

4. If supplementary pages are used, they must be fastened all together at the end of this Booklet. Supplementary pages should be used only after all the leaves in the booklet have been exhausted.

5. It is a serious examination offence to cheat or to have unauthorized materials including **MOBILE PHONES** (whether on or off) in the examination venue.

6. In no circumstances must Answer Booklet used or unused, be removed from the examination room by a candidate.

7. The Booklet is for **Examination use only** in a designated examination room. Unauthorized possession of the Answer sheets by a student or any other person constitutes an examination irregularity calling for stiff disciplinary action.

8. Do not pluck any page from this Booklet. Any extra/unused answer sheets should be returned to the **Examination Office.**

9. Candidates who come to examination room 30 minutes late will not be allowed to sit for the exam.

10. Candidates will not be allowed to leave the exam room once the exam commences.

11. Candidates are advised that importance is attached by examiners to accuracy and clarity of expression.

12. Committing any form of irregularity is prohibited and shall attract severe disciplinary action in accordance with Alupe University College Examination Regulations.

Student Admission No............................Exam Card No......................Signature............

INSTRUCTION TO CANDIDATES

Answer **ALL** questions from section A and any **THREE** from section B.
Illustrate your answers with suitable diagrams wherever necessary.
Duration of the examination: 3 hours
==

SECTION A (31 MARKS)

QUESTION ONE (16 MARKS)

(a) Distinguish between statistics and probability.   (2Mks)

(b) Highlight four distinct phases in statistical experiment.   (2Mks)

(c) The mean of 200 items was calculated as 50. If two items were misread as 92 and 8 instead of 192 and 88, find the correct mean.   (4Mks)

(d) Proof that $\sum_{i=1}^{N} f_i(x_i - \bar{x}) = 0$ (4Mks)

(e) Two variables X and Y assume the values $x_1 = 2, x_2 = 6, x_3 = 4, x_4 = 8$ and $y_1 = 4, y_2 = 8, y_3 = 10, y_4 = 6$. Find the combine mean of the two variables.   (4mks)

QUESTION TWO (15 MARKS)

(a) What do you understand the term quartile deviation.   (1Mk)

(b) Find the quartile deviation of the daily wages in (£) of 7 persons given as in 12, 7, 15, 10, 19, 17, and 25.   (3Mks)

(c) In an agricultural experiment the gains in masses of 30pigs during a certain period were recorded as 28, 31, 29, 27, 30, 29, 29, 26, 30, 28, 28, 29, 27, 26, 32, 28, 32, 31, 25, 30, 27, 30, 29, 30, 28, 29, 31, 27, 28, and 28. Construct the frequency distribution table and obtain

   (i)   Construct the frequency distribution table(2Mks)

   (ii)   Mode (2Mks)

   (iii) Median (2Mks)

   (iv)   Variance   (2Mks)

(d) Calculate the mean absolute deviation of the following frequency distribution (3Mks)

Weight (kg)	0-10	10-20	20-30	30-40	40-50	Total
No. of men	5	8	15	16	6	10

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SECTION B (31 MARKS)

Answer any THREE questions. All Questions carry equal marks

QUESTION THREE (13 MARKS)

(a) What do you understand by the term mutually exclusive events?   (1Mk)

(b) Two dice are tossed. Find the probability of getting:
    (i) 8 as the sum of the 2 faces   (3Mks)
    (ii) 8 as the sum of two faces given the 1st die shows a '3'   (3Mks)
    (iii)Neither A nor B will hit the target   (2Mks)

(c) A class has 10 boys and 5 girls. Three students are selected at random from the class without replacement. What is the probability that
    (i) All three are girls   (2Mks)
    (ii) The first two students chosen are boys and the third is a girl   (2Mks)
    (iii)The first and the third are of the same sex while the second is of the opposite sex   (2Mks)

QUESTION FOUR (13 MARKS)

a) A committee of 5 is to be chosen from 9 men and 6 women. In how many ways can it be formed if at least 4 women are to be on the committee?   (4Mks)

b) A student answers a multiple choice examination question that has 5 possible answers. Suppose that the probability that the student knows the answer is 0.85 and the probability that student guesses the answer is 0.15. Assume that if the student guesses, the probability of selecting the correct answer is 0.20. If the student correctly answers a question, find the probability that a student really knows the correct answer.   (7Mks)

c) Calculate the standard deviation from the following distribution.   (2Mks)

Class interval	1-3	4-6	7-9	10-12	13-15	16-18	19-21
Frequency	1	9	25	35	17	10	3

QUESTION FIVE (13 MARKS)

(a) For a given set of observations 6, 10, 25, 19, 15, 4, 20, 4, 7, 13 and 9, determine
    (i) The first and third quartile   (4Mks)

    (ii) The second moments about the actual mean   (3Mks)

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(b) The table below gives the marks obtained in statistics by 60 students.

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	5	8	11	15	13	6	2

Draw a cumulative frequency curve (Ogive) and determine the median mark, the sixth decile marks (D_6), the first quartile mark (Q_1) and the thirtieth percentage mark (P_{30})   (6Mks)

QUESTION SIX (13 MARKS)

The table below shows the distribution of masses of 100 college students.

Mass (Kg)	60-62	63-65	66-68	69-71	72-74
No. of students	5	18	42	27	8

Calculate;

    (i) The Pearson's first coefficient of skewness   (7Mks)
    (ii) The moment coefficient of kurtosis   (6Mks)

QUESTION SEVEN (13 MARKS)

(a) The sum of 50 observations is 500. The sum of squares is 6000 and median 12. Find the coefficient variation and the coefficient of skewness.   (4Mks)

(b) If the probability that a husband will be alive in 20 years is 0.7 and probability that his wife will be alive in 20years is 0.5. Find the probability that;
    (i) Both will be alive   (1Mks)
    (ii) At least one will be alive   (2Mks)
    (iii)None will be alive   (1mk)

(c) Given event A and B such that $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{4}$, and $P(A \cap B) = \frac{1}{6}$. Find
    (i) $P(A)^c$ (1Mk)
    (ii) $P(A \cap B^c)$ (1Mk)
    (iii)$P(A \cup B)$ (1Mk)
    (iv)$P(A/B)$ (2Mks)

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