



A Constituent College of Kenyatta University

UNIVERSITY EXAMINATIONS 2012/2013 ACADEMIC YEAR
2ND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF
EDUCATION (ARTS) AND BACHELOR OF ARTS
COURSE CODE/TITLE: AGE 200 : STATISTICS AND CARTOGRAPHY
END OF SEMESTER:I DURATION: 3 HOURS
DAY/TIME:TUESDAY: 2.00 TO 5.00 P.M. DATE:11/12/2012

INSTRUCTIONS

Answer Question ONE and any other TWO questions.

Question One

- a) Giving examples where appropriate, define and explain the following terms:
- i) Independent and dependent variables
 - ii) Discrete and continuous variables
 - iii) Population and samples
- b) Describe the normal curve

Question Two

- a) State the main conditions of a Bernoulli Trial
- b) Assuming all sex distributions to be equally probable, what is the probability that a family with exactly 6 children will have three boys and three girls?

- c) i) Find the probability of obtaining at least 5 success in 8 trials when the probability of success is 0.25?
- ii) Find the probability of obtaining exactly 9 successes in 12 trials when the probability of success is 0.8?
- iii) Suppose that 5% of the items produced by a factory are defective. If 8 items are chosen at random, what is the probability that:
1. Exactly one is defective?
 2. Exactly two are defective?
 3. At least one is defective?
 4. Less than three are defective?
- d) In a 15-item true-false examination, what is the probability that a student who guesses on each question will get at least 10 correct answers? If another student has 0.8 probability of correctly answering each question, what is the probability that this student will answer at least 12 questions correctly?

Question Three

- a) On a test, 80 is the mean and 7 is the standard deviation. What is the Z score of a score of
- i) 88?
 - ii) 62?
 - iii) Interpret your results
- b) A 25-item scale measuring political conservatism has been administered to a sample of 500 respondents. The scores of 8 respondents are listed below. For each score, determine the equivalent Z score and the percentage of cases above and below.

$$\bar{X} = 17; s = 3; N = 500$$

X_i	Z score	Percentage of Cases below	Percentage of Cases above
19			
10			
14			
15			
18			
20			
22			
23			

c) If you randomly selected subjects from the sample one at a time, what is the probability that their scores would be:

Scores	Z scores	Probability
Less than 17		
Less than 24		
Less than 10		
Less than 8		
Between 8 and 12		
Between 11 and 17		
Between 16 and 18		
Between 20 and 24		
More than 24		
More than 20		
More than 15		
More than 9		

Question Four

Using appropriate examples, discuss the probability sampling techniques.

Question Five

a) Define and explain any three of the following terms:

- i) Null hypotheses
- ii) Type I error
- iii) Critical region
- iv) Sampling distribution
- v) Standard error

- b) At a large urban college, about half of the students live off campus in various arrangements and the other half live in dormitories on campus. The results based on a random sample of 300 students are presented below. Is academic performance dependent on living arrangements? Use alpha 0.05.

Grade	Living Arrangement			
	Off Campus		On Campus	
	With roommates	With parents		
High	32	10	38	80
Moderate	36	40	54	130
Low	<u>22</u>	<u>20</u>	<u>48</u>	<u>90</u>
	90	70	140	300