



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF BUSINESS

MANAGEMENT SCIENCE DEPARTMENT

UNIVERSITY EXAMINATION FOR: DEGREE

BACHELORS OF COMMERCE/BACHELORS OF BUSINESS ADMINISTRATION (Y2S2)

BMS4203: ADVANCED BUSINESS STATISTICS

END OF SEMESTER EXAMINATION

SERIES: DEC, 2016

TIME: 2 HOURS

DATE: Pick DateSelect MonthPick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt **QUESTION ONE** and any other **TWO** Questions.

Do not write on the question paper.

Question ONE a) Define Binomial distribution. Point its main characteristics (4 mks)

b) What is Poisson distribution? State its characteristics. Give examples where it can be applied. (8 mks)

c) The marks obtained in a certain examination follow the normal distribution with mean 45 and standard deviation 10. If 1000 students appeared at the examination, calculate the number of students scoring:-

i) Less than 40 marks

ii) More than 60 marks

ii) Between 40 and 50 marks. (6 mks)

d) What do you mean by estimation?

Explain the following:

i) Point Estimation

ii) Interval Estimation (4 mks)

e) Write short notes on the following:-

i) Null and Alternative Hypothesis

ii) One tailed and Two tailed test

iii) Type I and Type II errors.

iv) Acceptance and Rejection regions. (8 mks)

Question TWO. A researcher wishes to try three different techniques to lower the blood pressure of individuals diagnosed with high blood pressure. The subjects are randomly assigned to three groups; the

First group takes medication, the second group exercises, and the third group follows a diet. After 4 weeks, the reduction in each person's blood pressure is recorded. At $\alpha = 0.05$, test

The claim that there is a NO difference among the means. The data are shown.

Medication	Exercise	Diet
10	6	5
12	8	9
09	3	12
15	0	08
13	2	04
$\bar{X}_1 = 11.8$	$\bar{X}_2 = 3.8$	$\bar{X}_3 = 7.6$
$S_1^2 = 5.7$	$S_2^2 = 10.2$	$S_3^2 = 10.3$

(20 mks)

Question THREE The latest countrywide political poll indicates that for Kenyans who are randomly

Selected, the probability that they are JUBILEE is 0.45, the probability that they are CORD Is 0.40, and the probability that they are middle-of-the –road is 0.15.

Assume that these probabilities are accurate, answer the following questions pertaining to A randomly chosen group of 10 Kenyans.

a) What is the probability that 4 are JUBILEE?

- b) What is the probability that 5 are CORD?
- c) What is the probability that 2 are Middle-of-the road?
- d) What is the probability that at least EIGHT are JUBILEE? (20 mks)

Question FOUR a) Given a Binomial distribution with $n = 25$ trials and $p = 0.05$, use the Poisson

Approximation to the binomial to find

- i) $P(r = 25)$
- ii) $P(r = 3)$
- iii) $P(r = 5)$ (10 mks)

b) Charles Yako, an auditor for a large Credit Card Company, knows that, on average, the monthly balance of any given customer is ksh 11,200, and the standard deviation is ksh 5,600. If Charles audits 50 randomly selected accounts, what is the probability that the Sample average monthly balance is

- i) Below ksh 10,000
- ii) Between Kshs 10,000 and Kshs 13,000 (10 mks)

Question FIVE. A sample of 200 people with a particular disease was selected. Out of these, 100 were given a Drug. The results are as follows:-

	Number of People		
	Drug	No Drug	Total
Cured	65	55	120
Not Cured	35	45	80
Total	100	100	200

Test whether the drug is EFFECTIVE or NOT ? (20 mks)