TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF BUSINES

MANAGEMENT SCIENCES

UNIVERSITY EXAMINATION FOR:DEGREE

BACHELORS OF COMMERCE/BACHELORS IN BUSINESS ADMNISTRATION

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 Normal distribution. What are the main characteristics of Normal Distribution?

(4 mks)

b) Explain the following terms:-

i) Random Variable

ii) Probability Function

iii)Expected value and variance (8 mks)

c) A manufacturer who produces medicine bottles, finds that 0.1% of the bottles are defective. The bottles are packed in boxes containing 500 bottles. Using Poisson distribution, find how Many boxes will contain

i) NO defective

ii) At LEAST two defectives (4 mks)

d) Distinguish between parameters and statistics (4mks)

e) What is X^2 -test? Under what conditions is it applicable? (6 mks)

f) Distinguish between the process control and product control in statistical quality control. (4 mks)

Question TWO A government employee wishes to see if there is a significant difference in the number of Employees at the interchanges of 3 Country toll roads. The data are shown. At x= 0.05, Can it be concluded that there is a significant difference in the average number of employees At each interchange.

MOMBASA TURNPOINT ---	KWALE BYPASS/DONGO KUNDUU EXPRESSWAY	TANARIVER EXPRESSWAY
7	10	1
14	01	12
32	01	01
19	00	01
10	11	01
11	01	11
$\bar{X}_1$= 15.5	$\bar{X}_2$= 4.0	$\bar{X}_3$ = 5.8
S_1^2 = 81.9	S_2^2 = 25.6	S_3^2 = 29.0

(20 mks)

Question THREE a) Identify 4 properties of Binomial Distribution? (4 mks)

b) Nduku's saloon has FIVE employees who are often late. Nduku has studied the situation over a period of time and has determined that there is 0.6 chance of any one employee being late and that they arrive independently of one another. Calculate the probability of 0, 1, 2, 3, 4, or 5 workers being late simultaneously? (12 mks)

c) Graphically depict the results. (4 mks)

Question FOUR a) In a sample of 30 observations from a normal distribution with mean 98.6 and Standard deviation 17.2.

i) What is P(92 < x < 102) ?

ii) Find the corresponding probability given a sample of 36 (10 mks)

b) In its 3rd year, attendance in the Kenya football league averaged 16,050 fans per game, and had a standard deviation of 2500.

i) According to these data, what is the probability that the number of fans at any given game was greater than 20,000?

ii) Fewer than 10,000 ?

iii) Between 14,000 and 17,500? (10 mks)

Question FIVE A certain drug is claimed to be effective in curing cold. In an experiment on 500 persons With cold, half of them were given the drug and half of them were given the sugar pills. The patients' reactions to the treatment are recorded in the following table:-

	Helped	Harmed	No Effect	Total
Drug	150	30	70	250
Sugar pills	130	40	80	250
Total	280	70	150	500

On the basis of this data can it be concluded that there is a significant difference in the effect of The drug and sugar pills? (20 mks)