



**The Co-operative University College of Kenya**  
(A Constituent College of Jomo Kenyatta University of Agriculture & Technology)

**END OF SEMESTER EXAMINATIONS APRIL - 2015**

**EXAMINATIONS FOR BACHELOR OF COMMERCE YEAR II SEMESTER II**

**UNIT CODE: HBC 2110**

**UNIT TITLE: INTRODUCTION TO BUSINESS STATISTICS**

**DATE:**

**TIME:**

**INSTRUCTIONS:**

Answer question **ONE (compulsory)** and any other **TWO** questions

**QUESTION ONE**

a)

- i. Explain Kurtosis and skewness terms (2 Marks)
- ii. Explain parametric and non-parametric tests (2 Marks)
- iii. A machine fills packets of wheat that are supposed to have a mean weight of 400g. A random sample of 360 packets was taken and the weight was found to be 424g with a standard deviation of 60g.

Required:

Develop a hypothesis, carrying out a significance test at 5% level of confidence and comment on the results (6 Marks)

b)

- i. Distinguish between Laspere's and Paasche's indices (2 Marks)
- ii. Suppose the price and quantity of snacks was as follows during years 2013 and 2014

	Year 2013		Year 2014	
	Price (Kshs)	Quantity (Bottles)	Price (Kshs)	Quantity (Bottles)
Juice	100	40	115	50
Cake	12	30	13	35
Milk	20	10	22	9

Required:

Computer the Laspeyre's, Paasche's and Fisher's price indices and comment on the results (5 Marks)

- c) Describe the types of random and non-random sampling (6 Marks)
- d) XZL is intending to undertake a project whose expected costs and revenues will be as follows during years 2015 to 2017 which are dependent on various economic scenarios with their respective probabilities:

Year	Cash flows	Economics condition	Probabilities	Amount
2015	Cost	Expected scenario	1	Shs 8,000,000
2016	Revenues	Best Scenario	0.2	Shs 5,000,000
		Expected Scenario	0.6	Shs 3,000,000
		Worst Scenario	0.2	Shs 1,000,000
2017	Revenues	Best Scenario	0.3	Shs 10,000,000
		Expected Scenario	0.4	Shs 5,000,000
		Worst Scenario	0.3	Shs 21,000,000

Required:

Using the decision trees approach, determine the expected aggregated net profit or losses for the period between 2015 to 2017 (7 Marks)

## QUESTION TWO

Number of Years	Profits (Y) Kshs.M	Sales (X) Kshs. M
2001	26	40
2002	-12	-14
2003	32	50
2004	38	54
2005	-16	-14
2006	20	34
2007	-10	-9
2008	16	26
2009	20	30
2010	-11	-10
2011	8	15

Required:

Using simple regression analysis technique, predict the profits for years 2008 to 2011 based on the data for years 2001 to 2007 and extract the error term between years 2008 to 2011 (20 Marks)

## QUESTION THREE

Based on the data below, compute the Pearson's correlation coefficient and the coefficient of determination and comment on the results (20 Marks)

Period	Harvest (Tons)	Fertilizer (Kgs)
1	1	15
2	-2	-14
3	3	13
4	4	12
5	5	11
6	-6	-10
7	7	9
8	8	8
9	9	12
10	10	13

#### QUESTION FOUR

Based on the following data capture the following:

- i) Arithmetic Mean,
- ii) Standard deviation,
- iii) Variance,
- iv) Coefficient of variation
- v) Range and
- vi) Quartile range

Class (Total Marks)	Frequency (Number of students)
100 to under 200	3
200 to under 300	7
300 to under 400	10
400 to under 500	5
500 to under 600	4

(20 Marks)

#### QUESTION FIVE

- a) You have been tasked with establishing consumer preference for 5 brands of toothpaste in the market named: Whitener, Fresh Breath, Tough Teeth, Best Smile and Best Paste. You are to supply a small quantity of each paste to 1,000 customers and ask them to taste and state the paste they prefer, the results of the inquiry are as follows:

Toothpaste Brand:	Whitener	Fresh Breath	Tough Teeth	Best Smile	Best Paste
Number of Likes:	125	232	208	198	237

You suspect that the customers are unable to distinguish between the pastes and that the preferences were influenced by advertisements and promotions. Hence if the brand names

of the pastes were replaced with letters A, B, C, D and E. the results would differ. Hence the expected preferences after the labeling would be as follows:

Toothpaste Brand:	Whitener	Fresh Breath	Tough Teeth	Best Smile	Best Paste
Number of Likes:	200	200	200	200	200

Required:

Using Chi square method, formulate the hypothesis and test them at 95% level of significance (10 Marks)

Type equation here.

- b) A manufacturing process has 80% learning effect and the 1<sup>st</sup> Units to be produced by a worker require 400 Hours.

Required:

- i) Determine the number of labour hours required to produce the 30<sup>th</sup> unit and comment on the value of the learning effect
- ii) Determine the labour hours required to produce the 30<sup>th</sup> unit (10 Marks)