CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF COMMERCE

BCOM 262: BUSINESS STATISTICS 1

STREAMS: BCOM (Y2S1)   **TIME: 2 HOURS**

DAY/DATE: MONDAY 8/8/2016   **2.30 P.M. – 4.30 P.M.**

INSTRUCTIONS: Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

(a)   Highlight four areas of application of statistics.   [4 marks]

(b)   Distinguish between the following statistical terms

   (i)   Qualitative and quantitative classification of data   [2 marks]

   (ii)   A null and alternative hypothesis   [2 marks]

(c)   (i)   What is meant by consumer price index?   [2 marks]

   (ii)   The table below shows prices and quantity for basic household commodities across two year period

	2011		2012	
Commodity	price	Quantity	Price	Quantity
Food	2	8	4	6
Fuel	5	10	6	5
Clothing	4	14	5	10
Transport	2	19	2	13

From the above data, construct and interpret the following index numbers taking 2011 as the basic period.

   (i)   Laspeyres' price index   [2 marks]

   (ii)   Paasche's quantity index   [2 marks]

(d)   The price and demand of a soft drink has been documented as follows:

Price (ksh.000)	2	3	5	4	2	6	2	3
Number of bottles	12	11	4	6	11	4	4	10

(i)   Calculate the Pearson's correlation coefficient and interpret your result.[4 marks]

(ii)   Determine the regression equation and use it to find the forecast number of bottles at a price of ksh. 9,000.   [4 marks]

(d)   The data below shows the distribution of income of 100 people in a country.

Income	100-120	120-140	140-160	160-180	180-200	200-220	220-240
Number of people	11	20	35	15	8	6	5

Required:

(i)   Calculate the arithmetic mean   [4 marks]

(ii)   Calculate the mode   [4 marks]

QUESTION TWO (20 MARKS)

(a)   State four characteristics of a poisson distribution.   [4 marks]

(b)   A manufacturer who produces medicine bottles finds that 0.1% of the bottles are defective. The blades are produced in packets of 10. Use poisson distribution to find the number of packets having two defective blades in a batch of 20000 packets.[4 marks]

(c)   Explain the following data collection methods

(i)   Direct observation   [2 marks]

(ii)   Questionnaires   [2 marks]

(iii) Interview   [2 marks]

(d)   The manufacturer of a new Toyota harrier claims that the car will average at least 20 km per litre of petrol in general highway driving. In 40 test runs, the car averaged 18.5 per litre of petrol with a standard deviation of 1.1 km per litre of petrol. Can the manufacturer's claim be rejected at 5% level of significance?   [6 marks]

QUESTION THREE (20 MARKS)

(a)   Explain the difference between positive and negative skewness.   [4 marks]

(b)   Explain briefly the components of time series data.   [4 marks]

(c)   The following information relate to quarterly profit (sh. Million) earned by firms in Growth Enterprise Market Segment of NSE.

Year	Q1	Q2	Q3	Q4
2009	33	36	35	38
2010	42	40	34	47
2011	54	53	54	62
2012	70	67	70	77

Required:

(i)   Centered four quarterly moving average.   [6 marks]

(ii)   Average seasonal index for each quarter using multiplicative model.   [6 marks]

QUESTION FOUR (20 MARKS)

(a)   In order to investigate the relationship between employment status at the time a loan was arranged and whether or not the loan is now in default, a loan manager randomly chooses 100 loan accounts, with the results indicated in the table below.

	Employment status	
Loan repayment	**Temporary**	**Permanent**
In Default	60	8
Not in Default	10	22

Required:

Test whether employment status and loan repayment are independent at 5% level of significance.   [4 marks]

(b)   (i)   State four properties of a normal distribution.   [4 marks]

(ii)   For a large population of normally distributed account balances, the mean balance is kshs. 15000 with standard deviation of kshs 3500. What is the probability that a randomly sampled account has a balance that:

(i)   Exceeds kshs. 1600   [2 marks]

(ii)   Lies between kshs. 13000 and kshs 20000   [2 marks]

(c)   The following table shows the pattern of overtime hours per week done by 101 employees of a company.

Overtime hours	10-15	15-20	20-25	25-30	30-35	35-40
Number of employees	2	6	14	21	33	39

Required:

(i)   Calculate the standard deviation.   [5 marks]

(ii)   Calculate the 70th percentile and interpret your result.   [3 marks]