MURANG'A UNIVERSITY COLLEGE

(*A Constituent College of Jomo Kenyatta University of Agriculture and Technology)*

EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS INFORMATION TECHNOLOGY.

HBC2110: INTRODUCTION TO BUSINESS STATISTICS

YEAR 2: SEMESTER I

DURATION: 2 HOURS: DECEMBER2013 EXAMINATION

INSTRUCTIONS

Question One is <u>Compulsory</u>. Answer any other <u>TWO</u> questions

QUESTION ONE (30MKS)

a) Mention five characteristics of a good measure of central tendency (5 mks)).

b) There are two branches of a company employing 100 and 80 employees respectively. If the arithmetic mean of the weekly salaries paid by two branches are Sh. 4,570 and Sh. 6,750 respectively, find the arithmetic mean of the salaries of the employees of the company as a whole (4 mks).

c) The odd that A speaks the truth is 3:2 and the odd that B speaks the truth is 5:3. In what percentage of cases are they likely to contradict each other on an identical point.(5 mks).

d) 500 Units from a factory are inspected and 12 are found to be defective, 800 from another factory are inspected and 12 are found to be defective. Can it be concluded at 5% level of significance that production at second factory is better than in the first factory. (6 mks).

e) The following data show the experience of machine operators and their performance rating as given by the number of good parts turned out per 100 pieces. Experience is in years while performance rating is on percentage.

Operator	:	1	2	3	4	5	6	7	8
Experience (x)	:	16	12	18	4	3	10	5	12
Performance rating (y)	:	87	88	89	68	78	80	75	83

Calculate the regression line of performance ratings on experience, and estimate the probable performance if an operator has 10 years experience. (10 mks).

QUESTION TWO(20 MKS)

a) The tables below shows the service time on a work station. Calculate the average service time for the place. (5 mks).

Class Interval (minutes)	**Frequency**
0 – 10	6
10 – 20	5
20 – 30	8
30 – 40	12
40 – 50	5
50 – 60	15

b) (i) Mention five problems in the construction of index numbers (5 mks).

(ii) Construct fisher's ideal index number from the following data (10 mks).

	2009		**2010**	
Commodity	**Price**	**Quantity**	**Price**	**Quantity**
A	10	10	12	12
B	15	5	20	6
C	8	10	10	11
D	20	3	25	2
E	50	10	60	9

QUESTION THREE (20 MKS)

a) Distinguish between dependent events and independent events (4 mks).

(b) A candidate is selected for an interview of management trainee for three companies. For the first company there are 12 candidates, for the second there are 15 candidates and for the third there are 10 candidates. What are the chances of his getting the job at least at one of the company (6 mks)?

(c)The number of workers employed, the mean weekly wage in Shs. and the standard deviation in Shs. in each branch of a company are given below. Calculate the standard deviation of all the workers taken together for the company (10 mks).

Branch	**Number of workers Employed**	**Weekly mean Wages (Shs)**	**Standard Deviation (Shs)**
A	50	1413	60
B	60	1420	70
C	90	1415	80

QUESTION FOUR (20 MKS)

a) Mention five points to be considered when designing a questionnaire (5 mks).

b) A piece of property was purchased for Shs. 200,000 and sold 10 years later for Shs. 326,000. What is the average percentage annual rate of return on the original investment (5 mks)?

c) 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	252
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?(Use α=0.05) (10 mks).

QUESTION FIVE (20 MKS)

a) Fit a straight line trend by the method of least squares to the following data on sales in millions of shillings for the period 2003 – 2010 (10 mks).

Year	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Sales	76	80	130	144	138	120	174	190

b) Mention five properties of standard deviation (5 mks).

c) Consider the following distribution.

X	**0-10**	**10-20**	**20-30**	**30-40**	**40-50**
F	12	18	20	25	23

Calculate the median and the mode (5 mks).

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EXAMINATION FOR THE DEGREE OF BACHELOR OF COMMERCE.

HBC2202: INTRODUCTION TO FINANCIAL MANAGEMENT

SUPPLIMENTARY / SPECIAL EXAMINATION

YEAR 2: SEMESTER I

DURATION: 2 HOURS: DECEMBER 2013 EXAMINATION

INSTRUCTIONS

Question One is compulsory. Answer any other TWO questions

QUESTION ONE (30MKS)

a) Explain any four objectives/goals of a business (8 mks).
b) A finance manager needs to understand the cost of finance/capital because of its application in various areas. Explain any of these **four** areas. (8 mks).
c) Discuss three advantages of Net Present Value (NPV) (6 mks).
d) Highlight four financial intermediaries in Kenya. (8 mks).

QUESTION TWO(20 MKS)

a) Explain five determinants of working capital needs. (10 mks).
b) Explain the meaning of the term "cost of capital" and explain why a company should calculate its cost of capital with care. (10 mks).

QUESTION THREE (20 MKS)

a) Highlight five features of an ideal investment appraisal method (10 mks).

b) Rekit limited intends to purchase a machine worth Shs. 1,500,000 which will have a residue value of shs. 200,000 after 5 years useful life. The saving in cost resulting from the use of this machine are:

	Shs.
Year 1	800,000
Year 2	350,000
Year 3	_____
Year 4	680,000
Year 5	775,000

Using NPV method, advice the company whether this machine should be purchased if the cut off rate is 14% and acceptable saving in cost is 12% of the cost of the investment. (10 mks).

QUESTION FOUR(20 MKS)

a) (i) Kamini Ltd. is an all equity firm whose Beta Factor is 1.2, the interest rate on Treasury bills is currently at 8.5% and the market rate of return is 14.5%. Determine the cost of equity (Ke) for the company (4 mks).

(ii) Explain the three theories advanced to explain the nature of yield curve (6 mks).

b) Discuss the role of secondary markets in the economy (10 mks).

QUESTION FIVE(20 MKS)

a) Explain the differences between Debt finance and ordinary share capital (Equity Finance) (10 mks).

b) What is the value of Shs. 100,000 investment annually at the beginning of each of the next 5 years at an interest of 12%. (10mks)

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YEAR 2: SEMESTER I

DURATION: 2 HOURS: DECEMBER2013 EXAMINATION

INSTRUCTIONS

Question One is <u>compulsory</u>. Answer any other <u>TWO</u> questions

QUESTION ONE (30 MKS)

a) Explain any four important managerial finance functions (8 mks).

b) Although profit maximization has long been considered as the main goal of a firm, shareholder wealth maximization is gaining acceptance amongst most companies as the key goal of a firm. Discuss (6 mks).

c) Highlight any four functions of financial markets/institutions in the economy. (8 mks).

d) Explain any four factors that affect capital structure of a firm (8 mks).

QUESTION TWO (20 MKS)

a) Discuss any five roles of capital market authority (CMA) (10 mks).

b) (i) Distinguish between systematic risk and unsystematic risk (6 mks).

(ii) The finance manager of ABC Technologies wishes to determine the expected rate of return from a proposed investment project. The expected future performance of the economy over the period is as follows:

Economic Scenario	**Probability of Occurrence (p)**	**Rate of Return(r) %**
Strong growth	0.25	15%
Moderate growth	0.50	12%
Low growth	0.25	8%

Calculate the expected rate of return (4 mks).

QUESTION THREE(20 MKS)

a) Explain the reasons why the finance manager needs to understand the management of working capital (8 mks).

b) Discuss any six factors that influence the cost of finance. (12 mks).

QUESTION FOUR(20 MKS)

a) The following is a mixed stream of cash flows occurring at the end of year.

Year	**Cash Flow (sh. 000)**
1	400
2	800
3	500
4	400
5	300

If a firm has been offered the opportunity to receive the above amounts and if its required rate of return is 9%, what is the most it should pay for this opportunity?(12 mks).

b) Explain four reasons why commercial banks prefer to lend short-term loans (8 mks).

QUESTION FIVE (20 MKS)

a) Explain four weaknesses of weighted cost of capital as a discounting rate (8 mks).

b) Assume ABC Ltd is considering project which costs Shs. 100,000 to be financed by 50% equity with a cost of 21.6% and 50% debt with a pre-tax cost of 12% the financing method would maintain the company's overall cost of capital to remain unchanged. The project is estimated to generate cash flows of Shs. 36,000 p.a. before interest charges and corporate tax at 33%.

Evaluate the project using

(i) Net Present Value method.
(ii) Adjusted Present Value (APV) method (12 mks).

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HBC2110: INTRODUCTION TO BUSINESS STATISTICS

SUPPLIMENTARY/SPECIAL EXAMINATION

YEAR 2: SEMESTER I

DURATION: 2 HOURS: DECEMBER2013 EXAMINATION

INSTRUCTIONS

Question One is <u>compulsory</u>. Answer any other <u>TWO</u> questions

<u>QUESTION ONE</u>(30MKS)

(a) The mean age of a combined group of men and women is 30 years.If mean age of the group of men is 32 and that of the group of women is 25, find out the percentage of men and women in the group. (5mks)

(b) From the data below calculate the lower quartile(Q_1), the upper quartile(Q_3) and the median. (6mks)

Class	**Frequency**
20-30	4
30-40	8
40-50	18
50-60	30
60-70	15
70-80	10
80-90	8
90-100	7

(c) The following data relate to advertising expenditure (in thousands) and their corresponding sales (in millions of shillings)

Advertising Expenditure(in thousands)	10	12	15	23	20
Sales(millions of shillings)	14	17	23	25	21

Obtain the regression equation of expenditure on sales. (10mks)

(d) Mention four components of time series (4mks)

(e) A businessman claims the probability that he will getcontract A is 0.15 and that he will get contract B is 0.20. Furthermore he claims that the probability of getting Aor B is 0.50. Is the claim correct? (5mks).

QUESTION TWO (20 MKS)

(a) From the following table, calculate the co-efficient of variation. (10mks)

Profits (Shs millions)	**No of companies**
Less than 10	8
Less than 20	20
Less than 30	40
Less than 40	70
Less than 50	90
Less than 60	100

(b) Compute index number from the following data using fisher's ideal index method. (10mks)

Commodity	**Base Year**		**Current Year**	
	Quantity	**Price**	**quantity**	**Price**
A	12	10	15	12
B	15	7	20	5
C	24	5	20	9
D	5	16	5	14

Question three (20 MKS)

(a) Mention five conditions for the application of chi-square test.(5mks)

(b) A sales clerk in the departmental store claims that 60% of the shoppers entering the store leave without making a purchase. A random sample of 50 shoppers showed that 35 of them left without buying anything. Are these sample results consistent with the claims of the sales clerk? Use a level of significance of 0.05. (5mks)

(c) Distinguish between Karl Pearson's and Bowley's co-efficient of skewness. Find an appropriate measure of skewness from the following distribution. (10mks)

Age (years)	**Number of employees**
Below 20	13
20-25	29
25-30	46
30-35	60
35-40	112
40-50	94
45-50	45
50 and above	21

QUESTION FOUR (20 MKS)

(a) The time series given below shows the number of T.V sold by a company since 2001

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TV sold (000)	42	50	61	75	92	111	120	127	140	138

Fit the linear equation that describes the trend in the number of TV sold. (10mks)

(b) Mention five methods of computing index numbers (5mks)

(c) A dice is thrown 49152 times and of these 25145 yielded either 4 or 5 or 6. Is this consistent with the hypothesis that the dice is unbiased (5mks)

QUESTION FIVE (20 MKS)

(a) The accountants were given intensive coaching and four tests were conducted in a month. The scores of tests 1 and 4 are given below.

Accountant	1	2	3	4	5	6	7	8	9	10
Marks for 1st test	50	42	51	42	60	41	70	55	62	38
Marks for 4th test	62	40	61	52	68	51	64	63	72	50

Does the score for test 1 to test 4 show improvements. Test at 5% level of significance (7mks)

(b) The means and standard deviation of a set of 100 observations' were worked out as 40 and 5 respectively by a computer which by mistake took the value 50 in place of 40 for one of the observations. Find the correct mean and standard deviation.(10mks)

(c) Mention three properties of the arithmetic mean. (3mks)

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EXAMINATION FOR THE DEGREE OF BACHELOR OF COMMERCE.

HBC2103: MATHEMATICS FOR BUSINESS

SUPPLIMENTARY EXAM

YEAR I: SEMESTER I

DURATION: 2 HOURS: DECEMBER 2013 EXAMINATION

INSTRUCTIONS

Question One is compulsory. Answer any other TWO questions

QUESTION ONE (30MKS)

(a) Define the following terms as used in set theory (4 mks).

(i) Universal set.

(ii) Union of set

(b) Solve $6x^{\frac{1}{3}} + x^{-\frac{1}{3}} = 5$ (6 mks)

(c)A company sells x tins of canned beans each day at kSh. 80 a tin. The cost of producing these tins is Sh. 50 per tin plus fixed daily overheads costs of Kshs. 18,000. Determine the profit function. What is the profit if 2000 tins are produced and sold a day? Find out the number of tins to be produced for break-even to take place. (7 mks).

(d) Evaluate $\lim_{x \to 3} \frac{x^3 - 5x + 4}{x^2 - 2}$ (4 mks).

(d) (i) Differentiate the function

$y = (3x - 4)^9$ (5 mks).

(ii) The cost function of a certain firm has been established to be

$C(x) = 50 + 2.5x$, While the revenue function is

$R(x) = 6x - 0.04x^2$

Determine the maximum profit if there are no restrictions. (4 mks).

QUESTION TWO(20 MKS)

(a) News Agency Limited deals in the distribution of three types of magazines namely, Newsline Informer and Update. The company recently conducted a market survey to determine the magazines preferences of 100 households in a certain town. The following results were obtained from the survey.

48 households read the Newsline Magazine.
18 Households read the Informer magazine.
26 households read the Update magazine
8 households read the Newsline and the Update magazines.
8 households read the Newsline and the Informer magazines.
3 households read the Update and the Informer magazines
3 households read all the three magazines.

(i) Represent the above information using a Venn diagram (4 mks).
(ii) Find the number of households that read the Newsline magazine but did not read the informer magazine (2 mks).
(iii) The number of households that read the update and the informer magazines but did not read the Newsline magazine. (2 mks).
(iv) The number of households that read none of the three magazines. (2 mks).

b) A green grocer has stock of fruits comprising 900 boxes of oranges, 700 boxes of grapes and 400 boxes of pears. The table below shows the market prices per box of the different types of fruits in four towns namely: Nairobi, Nakuru, Kisumu and Mombasa.

Town	**Market Price per Box (Sh. 000).**		
	Oranges	**Grapes**	**Pears**
Nairobi	4	2	3
Nakuru	5	1	2
Kisumu	4	3	2
Mombasa	3	2	5

Use matrix algebra, advice the green grocer on the town in which the stock of fruits should be sold in order to realize the maximum gross sales revenue. (5 mks).

(c) (i) A manufacturer produces DVD players and compact disk players. The DVD players requires 10 hours of labour and the disk players requires 20 hours. The labour hours available are limited to 300 hours per week. Existing orders require that at least 10 DVD players and at least 5 disk players be produced per week. Formulate the inequalities representing the above conditions. (3 mks).

(ii) Solve for x in $2x + 3 \leq x + 6$ (2 mks).

QUESTION THREE (20 MKS)

(a) Joe Ochieng has bought 10 acres pieces of land in Northern part of Central province. He would like to grow tea, coffee and horticulture. Past records shows that one of the farmers has 10 acres of which 3 are under tea, 4 under coffee and 3 under horticulture, and received Kshs. 121,000 in 2012. The second farmer had 4 acres of tea, 3 of coffee, and 3 under horticulture and received Kshs. 126,000 in 2012. The corresponding figures for the third farmer were 4, 4, 2 and Kshs. 124,000 respectively. Based on this information which crop should Ochieng grow (10 mks).

(b) (i) Which term of the Geometric Progression.
5, -10, 20, -40 is 320? (5 mks)

(iii) The first term of an A. P. is 10, the last term is 50. If the sum of all the terms is 480, find the common difference and the number of terms (5 mks).

QUESTION FOUR (20 MKS

(a)(i) A revenue function is given by $R = 24x - 3x^2$ where R is the revenue and x is the quantity. What value of x maximizes revenue? What is the maximum revenue? (5 mks).

(ii) The price P per unit at which a company can sell all that it produces is given by the function $P(x) = 300 - 4x$. The cost function is $C(x) = 500 + 28x$, where x is the number of units produced. Find x so that the profit is maximum. (5 mks).

(b) (i) A contractor for a construction job specified a penalty for delay in completion beyond the agreed date as Sh. 1,000 for the first day and sh. 100 more than the previous day for each of the subsequent days. How much does a 30 day delay in completion cost the contractor? (5 mks).

(ii) Find the three numbers in G.P. whose sum is 14 and product is 64. (5 mks).

QUESTION FIVE(20 MKS)

(a)The total cost function of a firm is

$C = \frac{1}{3}x^3 - 5x^2 + 28x + 10$ Where C is the total cost and x is the output. If the demand function is given by $P = 2530 - 5x$, where P is the price per unit of output. Find the profit maximizing output and the price at that this level. (10 mks).

(b) Evaluate $\int_0^4 (5x - x^2 - 4)\, dx$ (3 mks).

(c) If $\mathbf{A} = \begin{bmatrix} 3 & 8 & 11 \\ 6 & -3 & 8 \end{bmatrix}$ and $\mathbf{B} = \begin{bmatrix} 1 & -6 & 15 \\ 3 & 8 & 17 \end{bmatrix}$

Compute $7\mathbf{A} + 5\mathbf{B}$ (7mks).

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HBC2103: MATHEMATICS FOR BUSINESS

YEAR I: SEMESTER I

DURATION: 2 HOURS: DECEMBER2013 EXAMINATION

INSTRUCTIONS

Question One is <u>compulsory</u>. Answer any other <u>TWO</u> questions

QUESTION ONE (30MKS)

(a) Define the following terms as used in set theory. (4 mks).

(i) Intersection of sets.

(ii) Complement of a set.

(b) The supply and demand for 300ml bottle of soda in shillings are given as

Supply P= $\frac{3}{2}$q and Demand P = 81 – $\frac{3}{4}q$.

Find the equilibrium quantity and equilibrium price. (4 mks).

(c) If the total costs are C(x) = 500 + 90xand total revenues are R(x) = 150x – x^2. Find the break-even point(s). (4 mks).

(d) Evaluate the limit $(3x^2 - 5x + 4)$ (4 mks).

$x \to 2$

(e) The total electricity cost incurred by Viwanda Limited per month is given by the equation Y = a + bx

Where: y = is the total electricity cost per month in shillings.

a= is the fixed monthly electricity cost in shillings.

During the month of March 2013, Viwanda Limited used 100,000 kilowatt- hours and incurred total electricity cost of Sh. 600,000. During the month of April, 2013, the company used 190,000 Kilowatt – hours and incurred total electricity cost of Sh. 1,005,000.

(i) Find the values of a and b and the equation connecting x and y. (5 mks).

(ii) The total electricity cost incurred in a month when Viwanda Limited used 175,000 Kilowatt hours (2 mks).

(iii) The total number of Kilowatt hours used in a month when Viwanda Limited incurred total electricity cost of Shs. 1,045,000 (3 mks).

(f) Differentiate the function and give the answer in the most simplified form

$$Y= \frac{4x^3 - 2x^2}{7x - 2}$$ (4 mks).

QUESTION TWO(20 MKS)

(a)A quick survey of 1,000 children in a refugee camp produced the following results.

320 children were fed on beans.
200 children were fed on rice.
450 children were fed on potatoes.
150 children were fed on beans and potatoes.
70 children were fed on beans and rice.
100 children were fed on rice and potatoes.
300 children were fed on none of the three types of food.

(i) Present the above information in the form of a Venn diagram. (4 mks).

(ii) Find the number of children who were fed on all the three types of food (2 mks).

(iii) Find the number of children who were fed on exactly one of the three types of food (2 mks).

(iv) Find the number of children who were fed on at least two types of food (2 mks).

(b) A bookshop vendor sold 5 statistics books and 6 cost accounting books for sh. 24,400 to Tezo College. The vendor sold 7 statistics books and 9 cost accounting book for 35,600 to Taireni Institute of Technology.

(i) Form simultaneous equations to represent the above problem.

(ii) Use inverse matrix method to compute the price of a statistics book and the price of an accounting book. (5mks).

(c) (i) Find the values of x which satisfy the inequality.

$3x - 2 > 5x + 4$ (3mks)

(ii) Solve for x in $4^{x+2} = 64$. (2mks

QUESTION THREE(20 MKS)

(a) Solve for x in

$2 \log_4 x = 5$ (4 mks).

(b) A manufacturer produces a standard model and a deluxe model of a 14 inch television set. The standard model requires 12 hours of labour to produce, whereas the deluxe model requires 18 hours. The labour available is limited to 360 hours per week. Also the plant capacity is limited to producing as total of 25 sets per week. Formulate the inequalities representing the above conditions and represent them on a graph. (6 mks).

(c) Find the inverse of matrix (10 mks).

$$A = \begin{pmatrix} 3 & 9 & 9 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{pmatrix}$$

QUESTION FOUR(20 MKS)

(a) (i) Factorize the expression $x^3 - 17x^2 + 54x - 8$ given that one of the factors is (x-4) (6 mks).

4(a) (ii) Differentiate with respect to x

$X^2 \log x$ (3 mks).

(iii) Find the maximum and the minimum values of $2x^3 + 5x^2 - 4x + 7$ (6 mks).

(iv) The cost for manufacturing a commodity is given by $C = x^2 - 140x + 4990$, where x is the number of units of the commodity and C is the cost per unit. How many units should the company produce to minimize the cost and what is the cost per unit at this level of production? (5 mks).

QUESTION FIVE(20 MKS)

(a) A businessman feels that the profit he can earn weekly is approximately a quadratic polynomial. During the first 3 weeks, he earned Sh. 550, Sh. 960 and Sh. 1,400 respectively. Fit a quadratic function for the data and estimate his profit in the fourth week. (10 mks).

(b) (i) Evaluate $\int x (x - 4)^2$ (4 mks)

(ii) The total cost in Shillings of producing x units of a product is given by the linear relation $y = 2.5x + 300$. Find the fixed cost and estimate the cost of producing an additional unit of the commodity. (6 mks).