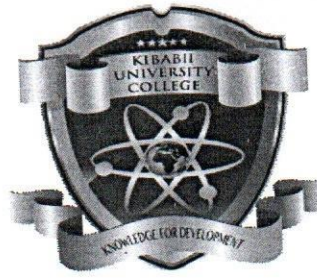*(Knowledge for Development)*

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2020/2021 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER

SPECIAL/SUPPLEMENTARY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION

COURSE CODE: ECO 202

COURSE TITLE: STATISTICS FOR BUSINESS AND ECONOMICS

DATE: 8TH FEBRUARY, 2021   **TIME:** 2.00PM – 4.00PM

INSTRUCTIONS TO CANDIDATES

Answer Question One in Section A and Any other TWO (2) Questions in Section B

TIME: 3 Hours

KIBU observes ZERO tolerance to examination cheating

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QUESTION ONE (COMPULSORY)

a) The following shows the salaries earned by workers in a certain department.

Salary sh. ('000)	0-10	11-20	21-30	31-40	41-50	51-60	61-70
Number of workers	6	12	22	37	17	8	5

Required

i)   The mean 4 marks

ii).   Median   4 marks

iii   Draw the histogram curve 4 marks

b) Explain four advantages of using random sampling rather than census while studying a population
.   4 marks

c) Work out the probability of the following normal distributions.

i) Pr $(Z \le 2)$ ii) Pr $(Z > 2.55)$ iii) Pr $(0 < Z < .88)$ 2 marks each

d) From past experience it is known that on average 5 customers visiting a supermarket in any particular hour make a purchase. Determine the probability that none of the customers will actually make a purchase. 5 marks

e) Differentiate between a universal set and a complementary set.   3 marks

QUESTION TWO

i)   It is known that one out the 10 undergraduate college text books is an outstanding success. A publisher has selected ten new textbooks for publication. What is the probability that

   a) Exactly one will be an outstanding financial success?

   b) At least one?

   c) At least three?

ii)   Explain four reasons why the mean is a popular measure of central tendency in statistics.
   (4 Marks)

   Five secretaries were selected at random from among the secretaries of a large insurance company. The typing speeds (in words per minute) were recorded for each secretary on an electric typewriter and a standard type writer. The following results were obtained.

Secretary	Electric type writer	Number of words per minutes
1	82	70
2	77	60
3	79	70
4	68	66
5	84	74

   Does this evidence justify the conclusion that the secretaries' typing speeds are greater with an electric typewriter than with a standard typewriter? Use $\alpha = 0.1$

QUESTION THREE

The following data relates to the interview scores obtained by 10 sales graduates on attachment in a certain supermarket.

Name	Interview score	First year sales
Kariuki	40	300
Onyango	30	100
Nduta	40	200
Mueni	30	100
Makokha	30	700
Fatuma	50	200
Moraa	20	100
Chebet	50	300
Munyao	20	100
Sokomo	43	252

i) Use the Ordinary Least Squares Method(OLS) to determine the regression line for the data. (10 marks)

ii) Interpret the results. (4 marks)

iii) Differentiate between primary and secondary data. (6 marks)

QUESTION FOUR

A casual observation by a researcher for a period of time revealed that there is some association between quantities demanded of a certain industrial product **Y** and income **X**. The researcher conducted a study which revealed the following:

Quantity	Income
110	1100
85	700
90	1300
80	600
60	400
75	500
100	1400
110	1200
70	400

i) Compute the strength of association between the quantity demanded and income. (10 marks)

ii) How does income influence quantity demanded? (2.5 marks)

iii) Estimate the quantity demanded if the income level rose to sh.2,000. (2.5 marks)

QUESTION FIVE

i) Explain the use statistics in business and economics. (5 marks)

ii) Of 1000 students at a college, 250 have a master card, 400 have a visa card and 100 have both.

a) Find the probability that a randomly selected student
   i) Has a master card. (1/2 mark)
   ii) Has a visa card. (1/2 mark)

iii)   Has both cards   (1.5 marks)
b) Construct and fill in the contingency table summarizing the credit card data and use the contingency table to find the following probabilities.
        i)   A student has a master card or visa.   (1 mark)
        ii)   Has neither credit card.   (1 mark)
        iii)   Has exactly one of the two credit cards.   (3 marks)

c) A firm wants to know with a 95% level of confidence if it can claim that the boxes of detergents it sells contain more than 500g of detergent. From past experience the firm knows that the amount of detergent in the boxes is normally distributed. The firm takes a sample of 25 boxes and finds that a mean of 520g and standard deviation prevails.Test the firm's claim.
(3 marks)