



(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR
SECOND YEAR FIRST SEMESTER
MAIN EXAMS

FOR THE DEGREE OF BACHELOR OF EDUCATION

COURSE CODE: ECO202

COURSE TITLE: STATISTICS FOR BUSINESS AND ECONOMICS

DATE: 27TH JANUARY, 2022

TIME: 9.00AM - 11.00AM

INSTRUCTIONS TO CANDIDATES

1. Answer Question One in Section A and Any other TWO (2) Questions in Section B
2. Question one carries 30marks and each of the other two questions carry 20 marks each.

TIME: 2 Hours

KIBU observes ZERO tolerance to examination cheating

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QUESTION ONE (COMPULSORY)

a) Past experience indicates that on average 6 visitors who entered a park in a week were foreigners. What is the probability that less than 4 visitors who visit the park will be foreigners?
3 marks

b) Suppose that 2 % of the factories in the manufacturing sector use coal for energy.

i) What is the probability that the first factory picked at random from a sample of 8 will be coal reliant? 2 Marks

ii) Determine $p(10 \leq X \leq 15)$ 3 Marks

c) Calculate the area under the normal curve for the following z values.

i) $Z=0$ to $z=1.23$ ii) $z=-1.8$ to 2.88 2 marks

d) The following shows the salaries earned by workers in the finance department in a firm.

Salary sh. ('000)	0-10	11-20	21-30	31-40	41-50	51-60	61-70
Number of workers	6	12	X37	17	Y5		

Required

i) The missing frequencies 5 marks

ii) The median salary 5 marks

e) The price for a basket of goods in country X for two years is shown below.

Commodity	Year	
	2000	2006
A	12.00	17.00
B	13.00	15.00
C	15.50	18.00
D	18.00	20.00

Taking 2000= 100 determine

i) The consumer price index for country X 4 marks

ii) The purchasing power of the shilling in 2006 2 marks

iii) Explain four limitations of using index numbers in studying economic trends. 4 marks

QUESTION TWO

i) For a random sample of 100 workers in a plant employing 1200, 70 prefer providing for their own retirement benefits instead of belonging to a company-sponsored plan. Find the 95% confidence interval for the mean of all the workers in the plant who prefer their own retirement plans. (10 marks)

ii) Simple observations over the last 80 hours have shown that 800 customers enter a certain bank. What is the probability that 5 customers will arrive in the bank during the next one hour? (3 marks)

iii) Gatheris Medical students' records the number of heart attacks suffered by males and females

of various age groups in a city as follows:

Age Group	Male	Female	Total
<30	10	10	20
30 – 60	50	30	80
>60	30	20	50

Using the above information, test whether the age and sex are independent in the occurrence of heart attacks at 1% level of significance. 3 marks

iv) Discuss 4 limitations of subjective inductive probability estimation (4 marks)

QUESTION THREE

The government antipollution spokesman asserts that more than 80% of the plants in the region meet the antipollution standards. An antipollution advocate does not believe the government claim. She takes a random sample of published data on pollution emission for 64 plants in the area and finds that 56 plants meet the pollution standards.

- i) State the hypotheses. 2 marks
- ii) Test the government's claim at 5% level of significance? Interpret your answer. (6 marks)
- iii) Explain the objective probability 4 marks
- iv) Company XYZ recently took an audit of its 100 workers. The audit revealed that 40 workers were skilled, 50 of them were graduates, while 10 workers were skilled - non graduates. Suppose the manager picked a worker at random
Determine the probability of
 - a) a graduate who is skilled 4 marks
 - b) a skilled non graduate 4 marks

QUESTION FOUR

- a) i) State four characteristics of a normal distribution density function. (4 marks)
- ii) Under what conditions can we Not Use the normal distribution but we can use the t-distribution to find confidence intervals for the unknown population mean? (3 marks)
- b) A company sells identical tooth paste in three different wrappings at the same price. The sales for five months are given in the table below. Show whether the consumer perceives the tooth paste in the three different wrappings as different. (7 marks)

Wrapping I	Wrapping II	Wrapping III
87	78	90

83	81	91
79	79	84
81	82	82
80	80	88

- c) Differentiate between type I and type II error. 2 marks
d) Explain four assumptions of a student t statistic test. 4 marks

QUESTION FIVE

a) The following table gives an hypothetical per capita income (Y) and the percentage of economy represented by agriculture (X) reported by the MNO research group for 2009 for 15 African countries.

Country	Y	X
Kenya	76	6
Tanzania	10	16
Mauritius	44	9
South Africa	47	8
Rwanda	23	14
Uganda	19	11
Nigeria	13	12
Botswana	19	10
Zambia	8	18
Zimbabwe	44	5
Ghana	4	26
Algeria	31	8
Liberia	24	8
Sudan	59	9
Morocco	37	5

Required

- i) Find the regression equation for the per capita income and the percentage of economy in agriculture. 5 marks
ii) Interpret your x. 5 marks
iii) Estimate the agricultural size when per capita income is sh.32. 5 marks