CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATION

RESIT/SPECIAL EXAMINATIONS

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

BUST 212: QUANTITATIVE TECHNIQUES

STREAMS: **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 05/05/2021 **11.30 A.M – 1.30 P.M**

INSTRUCTIONS:

a) **Answer Question ONE and any other TWO questions**
b) **Show all your workings**
c) **Do not write on the question paper**

QUESTION ONE

a) "Quantitative tools and techniques are basically important for improving the quality of managerial decisions." Examine the statement and discuss the role of quantitative techniques in planning and control of business activity. (15 marks)
b) Explain the meaning and significance of the concept of "Standard Error" in sampling analysis (5 marks).
c) "Sampling is a necessity under certain conditions." Explain this with illustrative examples. (10 marks)

QUESTION TWO

a) Sampling theory is very important in decision making in business environment. Define the term sampling theory and briefly discuss its objectives in relation to decision making. (10 marks)
b) Strength of the wire produced by company A has a mean of 4,600kg and a standard deviation of 200kg. Company B has a mean of 4,000kg and a standard deviation of 300kg. If 50 wires of company A and 100 wires of a company B are selected at a random and tested for strength, what is the probability that the sample mean strength of A will be at least 600kg more than that of B? (5 marks)

c) A bag contains defective articles the exact number of which is not known. A sample of 400from the bag gives 40 defective articles. Estimate the percentage of defective articles in the bag and assign limits within which the percentage probability lies (5 marks)

QUESTION THREE

a) State and briefly discuss types of correlation (4 marks)

a) State the points of difference between correlation and regression analysis (4 marks)

b) Briefly explain the assumptions in regression analysis (5 marks)

c) The personnel manager of an electronic manufacturing company devises a manual dexterity test for job applicants to predict their production rating in the assembly department. In order to do this he selects a random sample of 10 applicants. They are given a test and later assigned a production rating. Results are as follows:

Worker	A	B	C	D	E	F	G	H	I	J
Test Score	53	36	88	84	86	64	45	48	39	69
Production Rating	45	43	89	79	84	66	49	48	43	76

Fit a linear least square regression equation of production rating on test score. (7 marks)

QUESTION FOUR

a) What is business forecasting, the assumptions on which business forecasts are made and briefly describe the techniques that are commonly employed by big business houses? (10 marks)

b) Below are given figures of production (in million tonnes) of a cement factory:

Year	2001	2003	2004	2005	2006	2007	2008
Production (in m.tonnes)	77	88	94	85	91	98	90

i) Fit a straight line trend by the 'least squares method' and tabulate the trend values

ii) Eliminate the trend. What components of the time series are thus left over?

iii) What is the monthly increase in the production of cement? (10 marks)
