HERBERT CHITEPO SCHOOL OF LAW AND BUSINESS SCIENCES

DEPARTMENT OF ECONOMICS AND FINANCE

SUPPLEMENTARY EXAMINATION

BACHELOR OF COMMERCE	**PART 2 SEMESTER 2**
COURSE	**RESEARCH METHODS IN INSURANCE**
CODE	**HBF 2211**
DATE	
DURATION	**3 HOURS**

INSTRUCTIONS TO CANDIDATES

1. THE PAPER COMPRISES 5 QUESTIONS.
2. YOU ARE REQUIRED TO ANSWER ANY FOUR QUESTIONS.
3. BEGIN THE ANSWER TO EACH QUESTION ON A FRESH PAGE OF THE ANSWER BOOKLET.
4. NON-PROGRAMMABLE FINANCIAL OR SCIENTIFIC CALCULATORS ARE ALLOWED INTO THE EXAMINATION.
5. CANDIDATES WILL OBTAIN CREDIT FOR SHOWING ALL WORKINGS.

QUESTION 1

Using a topic from your field of study, write a research proposal you would present to your department in Partial Fulfilment of the Requirements of your degree programme. [25 marks]

[Total 25 Marks]

QUESTION 2

2.1 Discuss the purpose of Literature Review and Research Methodology in documentation of a Commercial Research Project.
[15 marks]

2.2 The table below summarizes the age classes and types of life assurance covers registered with Bandawa Life Assurance Firm in 2023 .

Type of Cover	**Short Term**	**Medium Term**	**Long Term**
Young Age	36	32	26
Middle Age	30	32	34
Old Age	36	42	48

Test the claim that the age of the client and type of life assurance cover are independent at 5% level of significance.
[10 marks]

[Total 25 Marks]

QUESTION 3

3.1Explain the concepts of regression and correlation analyses. [2 marks]

3.2 The following data refer to the ages and prices of various car models on the market:

Age (In Years)	5	6	3	2	4	7	8	9
Car Price ($000)	16	14	22	25	18	12	10	8

3.2.1 Determine the independent and dependent variables of the data. [2 marks]

3.2.2 Show the data on a scatter plot and comment on the distribution. [5 marks]

3.2.3 Estimate the Ordinary Least Squares (OLS) model connecting the two variables. Interpret your estimated linear regression coefficients. [6 marks]

3.2.4 Estimate the price for a car that is 12 years today. [3 marks]

3.2.5 Calculate Pearson's product moment correlation coefficient and the coefficient of determination. Appraise your findings. [7 marks]

QUESTION 4

4.1 Distinguish between descriptive and inferential statistics. [2 marks]

4.2 The following data refer to the pension benefits to be realized by the contributors from Denda Limited (the Insurer) at attainment of the pensionable age of 65:

Pension Benefit ($000)	50-80	80-120	120-150	150-180	180-210	210-240	240-270	270-300
Number of Clients	18	20	24	36	50	40	30	32

4.2.1 Compute the mean, mode, median and standard deviation of the data. [10 marks]

4.2.2 Evaluate the lower and upper quartiles of the data and draw a Box and Whisker plot to determine the skewness of the data. [8 marks]

4.2.3 Draw a histogram and less than ogive of the data, and use it to read the 8^{th} decile benefit. [5 Marks]

QUESTION 5

5.1 A bag contains 2 green, 4 blue and 8 red balls. The balls are well shuffled and two balls are chosen at random from the bag without replacement. What is the probability that:

5.1.1. Both balls are Red? (2 marks)

5.1.2 One is Green and the other one is blue? (3marks)

5.1.3 Both are Orange? (2mark)

5.2 If 10% of the cups produced by a machine are defective, what is the probability of a random sample of 5 cups containing:

5.2.1 Exactly two defectives? (3marks)

5.2.2 Fewer than three defectives? (2marks)

5.3 Suppose that a manufactured product has two defects per unit of product inspected. Use the Poisson distribution to calculate the probability of finding a product without any defect, three defects and four defects. (4marks)

5.4 A normally distributed class has a mean of 65 and a variance of 625. Calculate the probability that a student selected at random from the class will have a mark:

5.4.1 of 48. (2marks)

5.4.2 between 58 and 78 (3marks)

5.4.3 Above 75 (3marks)

END OF EXAMINATION PAPER