



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF HEALTH SCIENCES**  
**UNIVERSITY EXAMINATION FOR THE DIPLOMA IN**  
**COMMUNITY HEALTH AND DEVELOPMENT**  
**SPECIAL EXAMINATIONS NOV. 2020**

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**COURSE CODE:** HDC 2223  
**COURSE TITLE:** Biostatistics  
**EXAM VENUE:** **STREAM:**  
**DATE:** **EXAM SESSION:**  
**TIME: 3 HOURS**

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**Instructions:**

- 1. Answer all the questions in Section A and any 2 questions in Section B.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

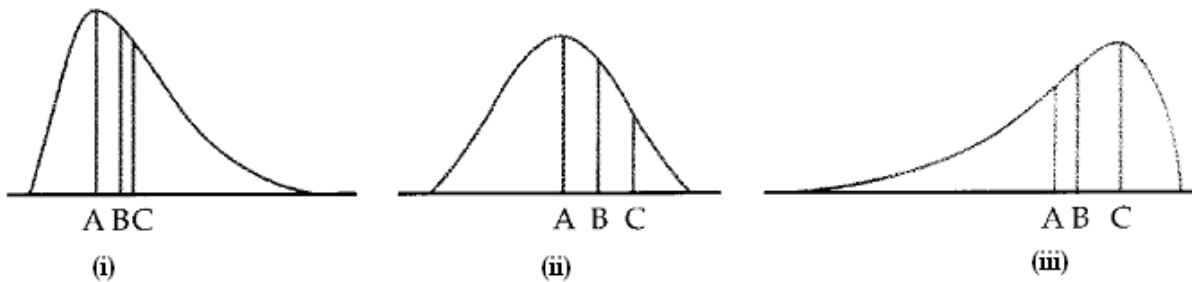
## Section A

1. A Phd student wishes to study the day-care expenses of 1800 working mothers who are in Bondo. A sample of 300 working mothers reveals that the average cost of day care per child is Ksh 200.00 per day, However, unknown to the social worker, the average cost of day care per child of all working mothers in Bondo is only Ksh 50.00 per day [ **3 marks**]
  - a. What is the population?
  - b. What is the sample?
  - c. What type of error was made?
2. A student from school of health science is interested in the average birth weight of infants born at the County hospital. A sample 200 births last month indicated that the average birth weight of was 2.9kg, However, unknown to the to the student, the average birth weight of all babies ever born at this hospital is 2.7kg, [ **2 marks**]
  - a. Is 2.9kg a parameter or statistic:
  - b. Is 2.7kg a parameter or statistic:
3. Chemical and manufacturing plants sometimes discharge toxic-waste materials such as DDT into the nearby lake. These toxins can adversely affect the marine animals. A PhD Student pursuing a degree in medical laboratory science recently conducted a study of fish in Lake Victoria. A total of 140 fishes were sampled, and the following variables were measured for each. [ **10 Marks**]
  - a. Explain the difference if any between qualitative or quantitative data
  - b. Classify each of the five-variable measured as qualitative or quantitative
    - I. Beaches where each fish was captured
    - II. Species (Tilapia, Mudfish, Nile perch)
    - III. Length (cm)
    - IV. Weight (grams)
    - V. DDT Concentration (part per million)
4. Consider the following scores: **3, 5, 7, 7, 8.**
  - a) Define the following terms Variance and **Standard Deviation** [ **2 mark**]
  - b) Calculate sample variance and sample standard deviation [ **8 marks**]
5. Which, if any, of these statements are true? you do not need to give reasons for your choice) [ **5 marks**]

- a) Gauss curve is defined as: Symmetrical to the vertical axis, which passes through.?
- b) Categorical date is the name is given to data which can be ranked ?
- c) Type I is an error made when one fails to reject the null hypothesis when it is false is?
- d) Mean of statistics is unaffected by outliers?
- e) The mean is, the middlemost score?

### Section B

6. Consider the following distributions.



- a) Explain the difference if any between mean and median [ **6 Marks**]
- b) At which points (A, B or C) do the mean, median and mode fall for each distribution? [ **9 marks**]
7. With two examples each, discuss the following terms: [ **15 marks** ]
  - a. An ordinal variable
  - b. A nominal variable
  - c. Continuous variable
  - d. A discrete variable
  - e. A pie graphs.

8. Define the following study design and give five strengths and five limitations of this study design: **Cohort studies**: [ 15 marks]