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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2019/2020 ACADEMIC YEAR ONE**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF SCHOOL OF PURE AND APPLIED SCIENCES**

**FOR THE DEGREE OF BACHELOR OF EDUCATION**

**COURSE CODE: IRD 104**

**COURSE TITLE: QUANTITATIVE SKILLS**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 11/12/2020 TIME: 09.00-11.00 AM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of FOUR (4) printed pages *please turn over***

**QUESTION ONE (COMPULSORY)**

1. Using a diagram, illustrate the following:
2. Positively skewed distribution **[2 marks]**
3. Normal distribution **[1 mark]**

1. The table below shows the domiciles of students Attending University of Lagos 2012 – 2015

 (Hypothetical)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Total students** | **West** | **East** | **North** |
| 2012 | 120 | 60 | 48 | 12 |
| 2013 | 150 | 90 | 30 | 30 |
| 2014 | 160 | 80 | 50 | 30 |
| 2015 | 200 | 110 | 50 | 40 |

Present the data with the use of percentage component bar chart**. [10 marks]**

1. The following shows lengths in centimeters of plants in a certain study: 13.5, 14.5, 4.8, 15.2 and 16.1. Calculate the geometric mean of the data. **[2 marks]**
2. Clearly explain three qualities of a good measure of central tendency. **[3 marks]**
3. City residents were surveyed recently to determine readership of newspapers available. 50% of the residents read the morning papers, 60% read the evening papers and 20% read both newspapers. Find the probability that a resident selected reads either the morning or evening paper or both the papers. **[4 marks]**
4. The following table shows the distribution wage earned by a number of employees of F.O.C. Construction Company in Lagos.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Wages Ksh | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 | 100-109 | 110-119 |
| No of employees | 4 | 12 | 18 | 11 | 7 | 5 | 2 | 1 |

1. Find the standard deviation and variance using assumed mean of Ksh. 74.50 **[6 marks]**
2. Determine the co-efficient of variation from (b) above. **[2 marks]**

**QUESTION TWO**

1. Distinguish between dependents events and complementary events as used in probability. **[2 marks]**
2. The table below shows the price and quantity of oil bought at a black market.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1992 | 1992 | 1993 | 1993 | 1994 | 1994 |
|  | Price Ksh | Quantity  | Price ksh | Quantity  | Price ksh  | Quantity  |
| Diesel | 35 | 100 | 40 | 90 | 52 | 130 |
| Petrol | 40 | 120 | 55 | 85 | 60 | 100 |
| Engine oil | 55 | 130 | 140 | 95 | 200 | 80 |

Calculate the weighted price index for 1993 and 1994 using 1992 as the base year using:

1. The Laspeyre’s price index **[6 marks]**

(b) The Paasche’s price index **[6 marks]**

(c) The Fisher’s Ideal Price Index**. [6 marks]**

**QUESTION THREE**

1. Outline the steps involved statistical enquiry. **[8 marks]**

(b)The weight of fifty pieces of iron rods was tabulated as shown in the following table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Weight  | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| frequency | 8 | 12 | 20 | 6 | 4 |

From the table, compute the:

1. Middle weight **[3 marks]**
2. Upper quartile **[3 marks]**
3. Lower quartile **[3 marks]**
4. 7th Decile **[3 marks]**

**QUESTION FOUR**

1. Highlight any three uses of index numbers**: [3 marks]**
2. The following data shows the masses of pigs in a certain farm

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mass (kg) | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-60 | 71-80 | 81-90 | 91-100 | 101-110 |
| No. of pigs | 1 | 7 | 8 | 11 | 19 | 10 | 7 | 5 | 4 | 3 |

From the table;

1. Prepare a frequency distribution table **[3 marks]**
2. Compute
3. Mean mass **[2 marks]**
4. Mean absolute deviation **[3 marks]**
5. Variance **[3 marks]**
6. Standard deviation **[3 marks]**

**QUESTION FIVE**

1. Differentiate between universal set and disjoint set.  **[3 marks]**
2. Give the meaning of a dependent variable [**2 marks]**
3. Explain two main characteristics of standard deviation **[4 marks]**
4. Clearly explain the content of axiomatic approach of probability **[3 marks]**
5. Discuss the limitations of use of arithmetic mean in statistics **[3 marks]**
6. Consider the table below,

|  |  |
| --- | --- |
| X | Frequency (F) |
| 10 | 3 |
| 20 | 5 |
| 30 | 8 |
| 40 | 7 |
| 50 | 6 |
| 60 | 1 |

Using 40 as the assumed mean to obtain the actual mean of X**. [5 marks]**