

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

DEPARTMENT OF MARKETING

MAR 2024

RESEARCH METHODOLOGY

BS209

DURATION: 3 HOURS

INSTRUCTIONS

1. Answer **FOUR** questions.
 2. Question ONE IS COMPULSORY
 3. Each question carries 25 marks.
 4. Start answering each main question on a fresh page.
 5. Credit will be given for appropriate use of illustrative examples and workings.
 6. No cell phones and programmable calculators are allowed in the examination room.
 7. Unprogrammed calculators are allowed in the examination room
 8. 7. You will be provided with a formula booklet
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QUESTION 1 (COMPULSORY)

A Bindura based historian was studying the number of births in the town and found the following figures relating to the years 1925-1934.

| Male births, x | Female births, y |
|----------------|------------------|
| 223 | 219 |
| 218 | 205 |
| 223 | 209 |
| 223 | 239 |
| 242 | 252 |
| 278 | 256 |
| 299 | 254 |
| 256 | 257 |
| 255 | 259 |
| 292 | 323 |

- Draw a scatter diagram to illustrate the above information (5 marks)
- Calculate the product-moment correlation coefficient for the above data (10)
- The historian believes the data gave strong evidence of a positive correlation between male and female births. Stating your hypothesis clearly, test at 1% significance level whether or not there is evidence to support the historian's claim (10)

[25 Marks]

QUESTION 2

Define the following concepts as applied in research

Closed questions(2)

Statistical inference(2)

Research design(2)

Empirical evidence(2)

Random sampling(2)

[25 Marks]

QUESTION 3

Jars of honey are filled by a machine. It has been found that the quantity of honey in a jar has mean 460 g, with a standard deviation 3g. It is believed that the machine controls have been altered in such a way that, although the standard deviation is unaltered, the mean quantity may have changed. A random sample of 90 jars is taken and the mean quantity of honey per jar is found to be 465g. Test at 5% significant level whether there has been a change in mean quantity of jars.

Interpret your findings.

[25 Marks]

QUESTION 4

a. Under data collection, explain the difference between descriptive and judgmental information (10)

. Information about a Sunday Mail newspaper readers is of interest to both the publisher and the newspaper advertisers. A survey of readers asked respondents to complete the following (10)

- Age
- Gender
- Marital status
- Number of magazine subscriptions
- Annual income

Identify the type of data in each of the above cases

- Explain the role of ethics when one is carrying out research (5)

[25 Marks]

QUESTION 5

i. Briefly discuss 4 non-random sampling methods used in research (10)

ii. In many families where the parents could have produced children of all four blood groups, the total number of children with each blood group was as follows:

| | |
|----------------|-----|
| Blood group A | 26 |
| Blood group B | 31 |
| Blood group AB | 39 |
| Blood group O | 24 |
| Total | 120 |

Can it be concluded that there is a significant difference in the blood group of the children?

Test at 5% significant level using the chi-square goodness of fit technique (15)

[25 Marks]

QUESTION 6

You are presented with the following population data
4, 5, 7, 9, 12, 15, 19, 0, 18, 16, 32, 8, 4

From the above data, determine and interpret the following:

- Mean (3)
- Median (3)
- Mode (2)
- Range (3)
- Interquartile range (4)
- Variance (5)
- Standard deviation (5)

[25 Marks]

END OF PAPER