

Question Paper

Exam Date & Time: 16-May-2022 (10:00 AM - 12:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.Sc. ESS/B.Sc. MLT/ B.Sc. MRT/ B.Sc. MIT / B.Sc. RRT & DT/EIGHTH SEMESTER BPT/BOT
DEGREE EXAMINATION - MAY 2022

SUBJECT: STAT 402 - BIOSTATISTICS & RESEARCH METHODOLOGY /BASIC BIOSTATISTICS & RESEARCH
METHODOLOGY/BIOSTATISTICS
(2016 SCHEME/2016 RV SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

1. Briefly explain the following:

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|-----|--------------------------------|-----|
| 1A) | Ordinal scale. | (2) |
| 1B) | General Fertility Rate (GFR). | (2) |
| 1C) | Infant Mortality Rate (IMR). | (2) |
| 1D) | Maternal Mortality Rate (MMR). | (2) |
| 1E) | Ecological Fallacy. | (2) |

2. Write short notes on the following:

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|-----|--------------------|-----|
| 2A) | Types of variables | (5) |
| 2B) | Census | (5) |

- 3) Erythrocyte Sedimentation Rate (ESR) readings (in mm) of 12 tuberculosis patients are given below. (10)
- 12 8 11 9 8 14 8 12 8 9 11 10
- Calculate the value of Coefficient of variation and Range of the data.
((2+5)+3 = 10 marks)

- 4) A random sample of 150 children had a mean urinary lead concentration of 3.15 $\mu\text{mol}/24\text{hr}$, with standard deviation 0.75. Construct reference range which includes 95% of the observations. (5)

5. A researcher wants to predict vital capacity of lungs (i.e. is the maximum amount of air a person can expel from the lungs after a maximum inhalation, measured in litres) using height of the individuals (measured in cms). A simple linear regression model was fit and it was found that the slope for height was 0.2. The intercept for the model was -0.5.

Using the model obtained from this study, answer the following questions:

- | | | |
|-----|---|-------|
| 5A) | State the dependent variable and independent variable of the fitted model. | (3) |
| 5B) | Write the form of simple linear regression model using the slope and intercept. | (3.5) |

5C) Interpret the value of slope. (3.5)

6) 'Correlation does not imply causation'. Explain this statement with an example. (5)

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