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BPT 4th YEAR, ANNUAL EXAMINATION, MAY 2023
RESEARCH METHODOLOGY & BIOSTATISTICS (THEORY)
PAPER CODE: BPT – 462

Time: 3 hours

Maximum Marks: 75

(Write your Roll No. on top of the paper immediately)

Instructions:

1. Attempt Section A and Section B in separate main sheets.
2. Use of simple calculator is allowed for Section B

SECTION A

RESEARCH METHODOLOGY (50 Marks)

Part – I

Multiple choice Questions (All are compulsory)

(1 × 16 Marks = 16 Marks)

1. In order to pursue the research, which of the following is priorly required?
 - a) Developing a research design
 - b) Formulating a research question
 - c) Deciding about the data analysis procedure
 - d) Formulating a research hypothesis
2. What are the conditions in which Type-I error occurs?
 - a) The null hypotheses get accepted even if it is false
 - b) The null hypotheses get rejected even if it is true
 - c) Both the null hypotheses as well as alternative hypotheses are rejected
 - d) None of the above
3. Which of the following does not correspond to characteristics of research?
 - a) Research is not passive
 - b) Research is systematic
 - c) Research is not a problem-oriented
 - d) Research is not a process
4. Which technique is generally followed when the population is finite?
 - a) Systematic Sampling Technique
 - b) Purposive Sampling Technique
 - c) Area Sampling Technique
 - d) None of the above

5. Which of the following statement is not correct about a questionnaire?
- a) A technique for collecting data
 - b) Large amounts of information can be collected
 - c) Its quick and easy to collect results
 - d) An expensive method to collect data
6. The purpose of which of the following research is to help in the process of developing a clear and precise statement of research problem rather than in providing a definitive answer?
- a) Exploratory
 - b) Descriptive
 - c) Explanatory
 - d) Applied research
7. The variable being tested & measured in a scientific experiment is _____.
- a) Dependent
 - b) Independent
 - c) Subjective
 - d) Fixed
8. General ethical principles include:
- a) Beneficence
 - b) Non-maleficence
 - c) Respect for person
 - d) All of the above
9. What do you mean by probability sampling
10. Define Hypothesis

Part – II

Answer any ~~THREE~~ of the following: *Compulsory*

(1 × 10 Marks = 10 Marks)

Q1. Define Research Proposal and explain its elements.

Part - III

Answer any *TWO* of the following:

(2 × 15 Marks = 30 Marks)

- Q1. What is Research Design? Explain the concepts of research design and the types research design?
- Q2. Discuss different methods of data collection with the help of suitable examples. Differentiate between Observation and Interview method?
- Q3. Describe Informed consent and its component. Explain the importance of informed consent in research?

SECTION B
BIOSTATISTICS (25 Marks)

Part- I

Multiple choice Questions (All are compulsory)

(1 × 25 Marks = 25 Marks)

1. Mode is a measure of:
 - (a) location (central value)
 - (b) dispersion
 - (c) correlation
 - (d) none of the above
2. The coefficient of variation (C.V.) is:
 - (a) $C.V. = \frac{\sigma}{\bar{x}}$
 - (b) $C.V. = \frac{\bar{x}}{\sigma}$
 - (c) $C.V. = \frac{\sigma}{\bar{x}} \times 100$
 - (d) $C.V. = \frac{\bar{x}}{\sigma} \times 100$
3. If the correlation between two variables is zero, then the two variables are:
 - (a) dependent
 - (b) independent
 - (c) associated
 - (d) none of the above
4. t-test is applicable in case of:
 - (a) small samples
 - (b) for samples of size less than 50
 - (c) large samples
 - (d) none of the above
5. ANOVA stand for:
 - (a) Analytical variable
 - (b) Analysis of covariance
 - (c) Multivariate analysis
 - (d) Analysis of variance

Part - II

Attempt any **TWO** of the following:

(2 × 10 Marks = 20 Marks)

- a) Twelve pre-school children were given a supplement of multipurpose food for a period of four months. Their skin fold thickness (in mm) was measured before the commencement of the programme and also at the end. The values obtained are given below. Test if there is any significance difference in their skin fold thickness.
(Given that $t_{0.05(11)} = 2.201$)

Skin fold thickness

Sr.(Child) No.	1	2	3	4	5	6	7	8	9	10	11	12
At the beginning	6	8	8	6	5	9	6	7	6	6	4	8
At the end	8	8	10	7	6	10	9	8	5	7	4	6

b) The pulse rate per minutes of 10 students in a class are as follows:

80, 90, 96, 80, 94, 72, 84, 92, 82, 90.

Calculate arithmetic mean and standard deviation.

c) From the following data, calculate coefficient of correlation:

Sl. No. of Patients	1	2	3	4	5	6	7	8	9	10	11	12
Age	56	42	72	36	63	47	55	49	38	42	63	60
B.P.	147	125	160	118	149	128	150	145	115	140	152	155
