

DEPARTMENT OF PHARMACEUTICAL SCIENCES & TECHNOLOGY
BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(Internal Assessment I)

CLASS: BPHARM
BRANCH: PHARMACY

SEMESTER: VIII
SESSION: SP 2025

SUBJECT: BP801T BIOSTATISTICS & RESEARCH METHODOLOGY

TIME: 2.00 Hour

FULL MARK: 30

PART I

A. Objective type questions (Answer all questions) (5 x 02 = 10 marks)
Or Multiple type questions (Answer all questions)

1. A random sample of size 40 from a normal population gives a sample mean of 42 and sample standard deviation of 6. Test the hypothesis that the population mean is 4.4
2. A BP measuring instrument claims that it can measure upto 300mmHg. In 100 trials, the obtained measuring ability of measuring BP is upto 250mmHg, with a SD of 20. Is the claim justified?
3. A random sample of 60 items of fruits gives a mean of 6.2 and variance 10.24. Can it be regarded as drawn from a normal population with mean 5. Use 1% level of significance
4. Differentiate between qualitative and quantitative research.
5. State different objectives of research.

PART II

B. Long Answers (Answer any one out of two) (01x10=10 marks)

1. a. From a sample of 50 pieces of mechanical component, sample mean is found to be 30 with an average diameter of approx. 28cm and SD is found from the sample to be 0.25cm. Test the hypothesis that the mean is average diameter of the mechanical component is atleast 27cm.[2]
b. What do you mean by Type I error and Type II error?
c. Write the steps in the process of Testing of Hypothesis.
d. A random sample of 400 members is found to have a mean of 4cm. Can it be reasonably regarded as a sample from a large population whose mean is 5.5cm and variance of 4
e. A Principal at a school claim that the students in his school are above average intelligence. A random sample of 30 students IQ scores have a mean of score of 112.5. Is there sufficient evidence to support the Principal's claim? The mean population IQ is 100 with a standard deviation of 15.
2. Discuss the relation between Variance and Mean Square Deviation using suitable equations.

PART III

C. Short Answers (Answer any two out of three) (02x05=10 marks)

1. Discuss any five difficulties of research that are faced by the researchers.
2. Calculate the mean for the following frequency distribution:

| | | | | | | |
|----------------|-------|--------|---------|---------|---------|---------|
| Class-interval | 0 - 8 | 8 - 16 | 16 - 24 | 24 - 32 | 32 - 40 | 40 - 48 |
| Frequency | 8 | 7 | 16 | 24 | 15 | 7 |

3. Find the mode of the following frequency distribution:

| | | | | | | | | | | | | |
|---------------|---|---|----|----|----|----|----|----|----|----|----|----|
| Size (x) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Frequency (f) | 3 | 8 | 15 | 23 | 35 | 40 | 32 | 28 | 20 | 45 | 14 | 6 |