

(6 pages)
S.No. 12

12PBCZ03

(For the candidates admitted from 2012–2013 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

Third Semester

Biochemistry

BIostatistics AND RESEARCH METHODOLOGY

Time : Three hours

Maximum : 75 marks

SECTION A — (5 × 5 = 25 marks)

Answer ALL the questions.

1. (a) Enumerate the various scales of measurements with suitable examples.

Or

- (b) Define the term "Statistical population" and discuss the importance of random sample in statistical inference.

2. (a) What is student's t-test and degree of freedom?

Or

- (b) What is Chi-square test? Discuss its significance in measuring degree of Deviation and in test of goodness of fit.

3. (a) Discuss the advantages of using statistical packages in scientific research.

Or

- (b) A bag contains 5 white and 3 black balls. Two balls are drawn at random one after the other without replacement. Find the probability that both the balls drawn are black.

4. (a) Narrate the meaning of research and highlight its importance.

Or

- (b) Briefly explain the significance of Review of Literature in the field of your research work.

5. (a) State the need for time scheduling for the major activities involved while conducting a research study.

Or

- (b) Explain how computers are helpful in biological research.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the questions.

6. (a) What is data collection? What are the various methods of collecting statistical data? Which of these are most reliable and why?

Or

- (b) Enumerate the components of a diagrammatic representation of biological data and mention its advantages.

7. (a) A pharmaceutical company develops a drug, which it claims to increase haemoglobin content in aged people. The haemoglobin content (g/100ml) of 10 subjects is measured before and after administration of the drug. On the basis of the following data, determine whether the company's claim is valid.

Subject:	1	2	3	4	5	6	7	8	9	10
Before:	10	9	11	12	8	7	12	18	10	9
After:	12	11	13	14	9	10	12	14	11	12

Or

- (b) The varieties of A, B, C wheat were sown in 4 plots each and the following yields in maunds per acre were obtained:

	A	B	C
	8	7	2
	4	5	5
	6	5	4
	7	3	4

Test the significance of difference between the yield of the varieties.

8. (a) The following data represents the mark scored by 100 students of a class. Fit a Normal distribution to the data and test its goodness of fit.

Marks scored by students (Class interval)	No. of students (Frequency)
55-64	1
65-74	2
75-84	9

Marks scored by students (Class interval)	No. of students (Frequency)
85-94	22
95-104	33
105-114	22
115-124	8
125-134	2
135-144	1
	100

Or

(b) You are given the following data :

Variable X Y

Mean 47 96

Variance 64 81

Correlation coefficient ρ between X and Y = 0.36 determine the equations of regression lines. Calculate Y when X = 50 and X when Y = 88.

9. (a) Define "research problems" Discuss the nature of research problem and indicate how an ideal problem is formulated for Research.

Or

(b) Discuss the importance of patenting. Explain the advantages of patenting scientific inventions.

10. (a) How is research work designed? Discuss the various experimental and non-experimental research design in biological science.

Or

(b) What are the characteristics of good research? Explain the importance of documentation and comment on the standards to be followed while documenting the research report.