

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Sixth Semester)

Branch – MICROBIOLOGY

DISCIPLINE SPECIFIC ELECTIVE II:
BIOSTATISTICS AND RESEARCH METHODOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

1. The application of statistical methods in Biology is called-----
(i) Statical biology (ii) Biostatistics
(iii) Mathematical biology (iv) all of these
2. What is the arrangement of data in rows and columns known as?
(i) Frequency distribution (ii) Cumulative frequency distribution
(iii) Tabulation (iv) Classification
3. The arithmetic mean of a set of 10 numbers is 20. If each number is first multiplied by 2 and then increased by 5, then what is the mean of new numbers?
(i) 20 (ii) 25 (iii) 40 (iv) 45
4. If the Mean and Mode are 25, then find the Median.
(i) 13 (ii) 9 (iii) 25 (iv) 0
5. When two variables move in the same direction then the correlation between the variable is
(i) Positive (ii) Negative (iii) Zero (iv) Perfect
6. The process of constructing a mathematical model or function that can be used to predict or determine one variable by another variable is called
(i) regression (ii) correlation (iii) residual (iv) outlier plot
7. Statistical significance or the probability of finding statistical significance is also known as
(i) Degrees of freedom (df) (ii) p-value
(iii) Standard deviation (sd) (iv) A constant source of frustration!
8. Which of these distributions is used for a testing hypothesis?
(i) Normal Distribution (ii) Chi-Squared Distribution
(iii) Gamma Distribution (iv) Poisson Distribution
9. Literature collected is reviewed and preferably arranged
(i) Alphabetically (ii) Chronologically
(iii) Randomly (iv) None of these
10. The act of presenting someone else's work or idea as own is considered as
(i) Academic dishonesty (ii) Wrongful appropriation
(iii) Plagiarism (iv) All of these

SECTION - B (35 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 7 = 35)

11. a) How statistical tools help to predict the data representation.

Cont...

(OR)

- b) In a study of examination marks scored by the students, the following data were Obtained. Draw a frequency polygon for the given data.

Marks obtained	(0-10)	(10-20)	(20-30)	(30-40)	(40-50)
Number of Students	8	12	22	28	20

12. a) Illustrate in brief about three types of central tendency.

(OR)

- b) The means of two samples of sizes 30 and 50 are 32.5 and 54 respectively. Find the mean sample of size 80.

13. a) On entry to a school, an intelligence test was given to a small group of children. The following results obtained in the test and in a subsequent examination are given below. Find the measures of closeness value of the correlation coefficient by Karl Pearson's method:

Children Number	1	2	3	4	5	6	7	8
Intelligence test score	7	6	5	7	8	9	6	8
Marks in examination	10	7	4	5	4	7	4	7

(OR)

- b) What are the strengths and weaknesses of linear regression?

14. a) Explain in detailed account on properties and applications of Student t test.

(OR)

- b) Nephropathy was observed in 100 cases of each class of diabetics, divided into 4 classes as per severity of disease.

Class	I	II	III	IV
Observed frequency	8	15	14	7

Is this inequality in different classes due to severity? ($\chi^2_{0.05,3} = 7.81$)

15. a) Define in brief about the different sources of data collection.

(OR)

- b) Add critical comments on efficient structure of the research project.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks ($3 \times 10 = 30$)

16. Briefly explain about various types and applications of Graphical representation.

17. Find the standard deviation for the following distribution.

Age in Yrs	25	30	35	40	45	50	55	60
No of persons	15	28	42	50	30	20	10	5

18. What do you mean by Regression? Add a note on its types.

19. Add an account on different steps involved in testing a hypothesis..

20. What is plagiarism? Mention the types and applications of plagiarism.

Z-Z-Z

END