

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BSc DEGREE EXAMINATION MAY 2025  
(Sixth Semester)

Branch – MICROBIOLOGY

**MAJOR ELECTIVE COURSE – II: BIOSTATISTICS AND RESEARCH  
METHODOLOGY**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. Which of the following is one-dimensional diagram?  
i) Bar diagram      ii) pie chart      iii) cylimder      iv) a graph
2. Which of the following measures of central tendency can have more than one value in a single sample?  
i) mean      ii) median      iii) mode      iv) none of the above
3. The coefficient of correlation will have positive sign when:  
i)  $X$  is increasing and  $Y$  is decreasing.      ii) both  $X$  and  $Y$  are increasing.  
iii)  $X$  is decreasing and  $Y$  is increasing      iv) there is no change in  $X$  and  $Y$ .
4. The range of statistic –  $t$  is  
i) - 1 to + 1      ii)  $-\infty$  to  $\infty$   
iii) 0 to  $\infty$       iv) 0 to 1
5. Why is a literature review important in selecting a research problem?  
i) It helps in identifying research gaps  
ii) It eliminates the need for hypothesis formation  
iii) It reduces the research cost  
iv) It ensures the problem is completely solved

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. a) Draw a Pie diagram for the following data.  
Item: Food    Clothing    Rent    Other Expenses:  
Value: 240    160    80    200  
(OR)  
b) Explain the different types of graphs.
7. a) Calculate the value of mode from the following data.  
Marks:                      0-19    20-39    40-59    60-79    80-99  
No. of students:            5        20        35        20        12  
(OR)  
b) Find out the value of quartile deviation and co. efficient of quartile deviation from the following data.  
X:    10    20    30    40    50    80  
f:    4    7    15    8    7    2
8. a) From the following information find the line of regression of  $Y$  on  $X$ :  
Mean                      X                      Y  
S.D                        40                      60  
                              10                      15  
Correlation Co. efficient = 0.7  
(OR)  
b) Calculate the Spearman's co. efficient of Rank correlation from the following data.  
X:    21    36    42    37    25  
Y:    47    40    37    42    43

Cont...

9. a) Explain the terms (i) Critical region (ii) Level of significance.  
(OR)  
b) Explain the chi-square test for independence of Attributes.
10. a) What are the seven stages in research?  
(OR)  
b) Explain the guidelines for writing the research projects.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

11. a) Define Primary data. What are the different methods of collecting primary data?  
(OR)  
b) Explain the different classification of data with an example.
12. a) Compute Mean, Median and Mode from the following data:  
 Class: 11-20 21-30 31-40 41-50 51-60 61-70 71-80  
 Frequency: 42 38 120 84 48 36 31  
 (OR)  
 b) Following are the Hb levels of 10 pregnant women. Compute the standard deviation.  
 Hb. Level: 10 12 11.2 9.5 8.6 10.5 12.3 7.5 8.5 10.2
13. a) The age and blood pressure of 10 women are:  
 Age: 56 42 36 47 49 42 60 72 63 55  
 BP : 147 125 118 128 145 140 155 164 149 150  
 i. Find the correlation co. efficient between age and blood pressure.  
 ii. Find the regression equation of BP on Age.  
 iii. Estimate the BP of a woman whose age is 45.  
 (OR)  
 b) Obtain the lines of regression for the following:
- |   |   |   |    |    |    |    |    |    |    |
|---|---|---|----|----|----|----|----|----|----|
| X | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| Y | 9 | 8 | 10 | 12 | 11 | 13 | 14 | 16 | 15 |
14. a) Explain the test procedure of test for difference between two means.  
(OR)  
b) A sample of 900 members has a mean 3.4cms and standard deviation 2.61 cms. Is the sample from a large population of mean 3.25cms?
15. a) Describe the different types of research.  
(OR)  
b) Explain the steps involved in writing reports.

Z-Z-Z

END