

**PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2023  
(Fourth Semester)**

**Branch – BIOTECHNOLOGY**

**BIOSTATISTICS**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Sum of deviation about mean is
 

(i) Zero	(ii) Minimum
(iii) Maximum	(iv) One
  
- 2 The number of possible samples of size n out of N population units with replacement is
 

(i) $N^2$	(ii) $n^2$
(iii) $\infty$	(iv) $N!$
  
- 3 Regression coefficient is independent of
 

(i) Scale	(ii) Origin
(iii) Both scale and origin	(iv) Neither scale nor origin
  
- 4 The equality of several means can be tested by
 

(i) F - test	(ii) Z - test
(iii) $\chi^2$ - test	(iv) t - test
  
- 5 In RBD, the error degrees of freedom for 'b' blocks and 'v' treatments is
 

(i) $b(v-1)$	(ii) $v(b-1)$
(iii) $(b-1)(v-1)$	(iv) $b-v$

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Define geometric mean, and explain merits and demerits of geometric mean.  
OR
- b Two samples of size 40 and 50 respectively have the same mean 53 but different standard deviations 19 and 18 respectively. Find the standard deviation of the combined sample of size 90.
  
- 7 a Define Sample. Write the different types of sampling.  
OR
- b State the merits of systematic sampling.
  
- 8 a Calculate the coefficient of correlation between x and y from the following data
 

x	1	3	5	8	9	10
y	3	4	8	10	12	11

  
OR
- b Write short notes on Type I and Type II errors.

Cont...

- 9 a A random sample of 10 boys has the following IQ's 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Do these data support the assumption of a population mean IQ of 100?  
OR
- b Summarise Chi-square test and discuss its uses.
- 10 a Explain the concept of randomization, replication and local control.  
OR
- b Narrate the layout of Latin Square Design.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Calculate mean, median and mode for the following data and verify the empirical relation

Class	1-10	11 - 20	21 - 30	31 - 40	41-50	51 - 60	61 - 70	71- 80	81-90	91 - 100
Frequency	3	7	13	17	12	10	8	8	6	6

OR

- b The scores of two players A and B in 12 rounds are given below

A	74	75	78	72	78	77	79	81	79	76	72	71
B	87	84	80	88	89	85	86	82	82	79	86	80

Identify the better player and the more consistent player.

- 12 a Explain the merits of sampling technique over the complete enumeration survey.  
OR
- b Describe the method of stratified sampling.
- 13 a Find the two regression coefficients  $b_{yx}$  and  $b_{xy}$  and hence find the correlation coefficient for the following data  
 $\Sigma x = 24$ ,  $\Sigma y = 44$ ,  $\Sigma xy = 306$ ,  $\Sigma x^2 = 164$ ,  $\Sigma y^2 = 576$ ,  $N = 4$   
OR
- b Highlight the steps in solving testing of a hypothesis. Point out the difference between one tail and two tail tests.
- 14 a Describe paired t-test with an example.  
OR
- b From the following data test if the difference between the variances is significant at 5% level of significance

Sample	A	B
Size	8	10
Sum of squares of deviations from the mean	84.4	102.6

- 15 a Enumerate the analysis of Randomized Block Design and state its merits and demerits.  
OR

- b The following figures relate to production in kgs of three variables A, B, of C of wheat grown on 12 plots

A	14	16	18		
B	14	13	15	22	
C	18	16	19	19	20

Is there any significant difference in the production of varieties?

Z-Z-Z

END