

**B. PHARM.
EIGHT SEMESTER
BIOSTATISTICS & RESEARCH METHODOLOGY
BP801T**

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration : 3 hrs.

Full Marks : 75

(PART-A: Objective)

Time : 30 min.

Marks : 20

Choose the correct answer from the following:

1×20=20

1. Correlation is a
 - a. relationship between two variables.
 - b. mathematical function expressing the average relationship between two variables.
 - c. functional relationship between two variables.
 - d. none of the above
2. Which of the following statement is true in case of multiple regression?
 - a. There is one dependent variable and two or more independent variables.
 - b. There is one independent variable and two or more dependent variables.
 - c. There is no restriction about the number of dependent and independent variables.
 - d. None of the above.
3. If $P(A^c) = 0.75$, then $P(A) = ?$
 - a. 0.75
 - b. 0.50
 - c. 0.25
 - d. 0.20
4. The rate of recovery of COVID-19 in a certain locality is 75%, the variance number of recoveries in a sample of 500 infected people in the locality is
 - a. 75
 - b. 375
 - c. 9.68
 - d. 93.75
5. In a Poisson distribution
 - a. the trials are independent and finite
 - b. the trials are independent and infinite
 - c. the trials are dependent and finite
 - d. the trials are dependent and infinite
6. A characteristic of a population is called
 - a. sample
 - b. Sampling
 - c. parameter
 - d. None of the above
7. Which of the following statement is true in case of two tailed test?
 - a. There is significant difference between true and a hypothetical value of a parameter
 - b. There is significant difference between true and a hypothetical value of a parameter
 - c. The true value of a parameter is greater than its hypothetical value.
 - d. The true value of a parameter is less than its hypothetical value.
8. A random selection of sampling units from a population, is known
 - a. Non-probability sampling
 - b. Probability sampling
 - c. Mixed sampling
 - d. None of the above

9. Type-II error implies:
- a. Not rejecting the null hypothesis when it is true
 - b. Not rejecting the null hypothesis when it is not true.
 - c. Rejecting the null hypothesis when it is true.
 - d. Rejecting the null hypothesis when it is not true
10. Which of the following tests is used in Analysis of variance?
- a. To test the several population means
 - b. To test the several population variances.
 - c. Both (a) and (b)
 - d. Neither (a) nor (b)
11. Which is related to frequency distribution?
- a. Variables
 - b. Class interval
 - c. Frequency
 - d. All of the above
12. The coefficient of range of the following data: 36, 56, 38, 44, 24, 39, 51, 41, 45, 46, 52
- a. 0.40
 - b. 4
 - c. 0.18
 - d. 2.5
13. What is the harmonic mean for: 18, 12, 16, 21, 7, 9
- a. 11.9
 - b. 9.1
 - c. 1.3
 - d. 12
14. First step of an investigation is
- a. analysis of data
 - b. collection of data
 - c. presentation of data
 - d. explanation of data
15. In a dataset, if there are 4 mode, then it is called
- a. quadrimodal
 - b. multimodal
 - c. bimodal
 - d. polymodal
16. A distribution in which mean, median and mode have different values, then it is called _____ distribution.
- a. Symmetrical
 - b. Skew
 - c. Asymmetrical
 - d. All of the above
17. If the range is high, then the depression is
- a. Low
 - b. Equal
 - c. High
 - d. None of the above
18. _____ is used to compare the variability of two or more than two series
- a. Mean
 - b. Coefficient of variation
 - c. Standard Deviation
 - d. Mean deviation
19. The mode of the following series is
12, 3, 5, 3, 2, 4, 9, 8, 6, 5, 8, 11, 5, 9, 7, 5, 4, 6
- a. 7
 - b. 3
 - c. 5
 - d. 6
20. A group distribution can be represented by
- a. Line plot
 - b. Frequency curve
 - c. Frequency plot
 - d. Histogram

(PART-B : Descriptive)

Time : 2 hrs. 30 min.

Marks : 35

[Answer any seven (7) questions]

1. What is research? Write a note on latin square design with proper example? 1+4=5
2. Define research design, cluster randomization and variables? Discuss about the types of variables with examples? 3+2=5
3. Write a note on experimental design technique? 5
4. Calculate the mean by shortcut method of the following data? 2.5+2.5=5

Marks scored	40	48	52	58	64	69	74	78
No. of Scholars	5	2	7	8	5	3	2	1

Also, Calculate the geometric mean of the following daily income of workers: 700, 900, 800, 850, 750?

5. Write a note on measure of dispersion? 5
6. Write the expression of a binomial distribution with parameters n and p. Mention its important assumptions. 5
7. If the heights of 500 students are normally distributed with mean 68.0 inches and standard deviation 3.0 inches, how many students have height between 65 and 71 inches. Given that the area of a normal curve in between $z = -1$ and $Z = 1$, is 0.6826. 5
8. Explain Type-I error and type-II error. Which error is more harmful in Research? 5
9. Distinguish between parametric test and non-parametric test. 5

(PART-C: Long type questions)

[Answer any two (2) questions]

1. The heights of the father and sons are given below Heights of father (in inches) : 60 65 66 63 67 69 70 10

Heights of sons (in inches) : 65 64 66 62 69 68 69

Estimate the height of son, whose father's height is 68 inches

2. The following data give the yield on 12 plots of land of three samples under the three varieties of fertilizers A, B and C. 10

A: 25, 22, 24, 21, 20

B: 17, 16, 16, 18

C: 24, 26, 30

Test at 5% level of significance whether there is any significant difference in the average yields of land under three varieties of fertilizers. [Given, the critical value of the test statistic at 5% level of significance for (2, 9) df and (9, 2) df are respectively 4.26 and 19.38)

3. Calculate the coefficient of variation of the weight of pills: 5, 6, 8, 7, 5, 3, 4, 3, 6, 3. 10

The following data is of the number of patient visiting govt. hospital. Calculate mean and median?

No. of patient	1000 - 1500	1500- 2000	2000- 2500	2500- 3000	3000- 3500
No. of Days	17	24	29	10	5

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