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Total No. of Pages : 04

Total No. of Questions : 13

# B.Pharma (Sem.-8) BIOSTATISTICS AND RESEARCH METHODOLOGY Subject Code : BP-801T M.Code : 79764 Date of Examination : 24-12-22

Time: 3 Hrs.

Max. Marks: 75

## **INSTRUCTIONS TO CANDIDATES :**

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
- 3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

## **SECTION-A**

#### 1. Answer Briefly :

- a) Distinguish between. Paired and Independent t test.
- b) The percentage of herbal drug sector in different countries is given below table:

Country	India	China	Germany	Italy	The	Japan	America	UK	Total
					Netherland				
Percentage of herbal drug	13	18	24	11	5	14	10	5	100
sector									

Represent this information using a pie-chart.

- c) What is the need of design of experiment?
- d) If two lines of regression are

$$4x - 5y + 30 = 0$$

$$20x - 9y - 107 = 0$$

Which of these lines, is the line of regression of x on y.

- e) Define standard deviation and coefficient of variation.
- f) Write down advantages of Minitab.
- g) What are the strengths of 'R' Online Statistical software?
- h) How can central composite design used to optimize factors?
- i) What are the types of statistical errors?
- j) What are the characteristics of an ideal Measure of Dispersion?

## **SECTION B**

- 2. What is factorial design? Give its advantages. Elaborate various types of factorial designs.
- 3. a) Give a detailed note on MS-Excel.
  - b) Calculate median and mode of the data

Marks than	less	10	20	30 '	40	50	60
No. of stude	ents	8	23	45	65	75	80

- 4. Given the bivariate distribution shown in Table 1, in which both X and Y are 10 random variables.
  - a) Compute the correlation coefficient;
  - b) Test the sample correlation coefficient for statistical significance;
  - c) If r is statistically significant, estimate the upper and lower limits of p and state your conclusion concerning the variability in X that is associated with the variability in Y.

Number	Х	Y	Number	Х	Y
1	50	20	6	49	21
2	54	19	7	52	18
3	36	23	8	58	17
4	63	18	9	46	16
S	53	20	10	45	25

#### **SECTION-C**

5. Two different methods were used to determine the concentration of prothrombin in plasma. Determinations were made on different subjects. Determine whether a significant difference exists between the two methods.

Method 1	Method 2
17	18
17	17
18	20
21	24
22	23 ;
17	15
23	25
23	22
15	16
18	
21	

- 6. What are key features of SPSS?
- 7. The haemoglobin levels of three groups of children fed the three different diets are given in table. Test whether the means of three groups differ significantly.

Group I	Group II	Group III
10.2	9.6	10.7
9.7	11.4	8.9
12.0	10.7	9.5
11.3	8.8	9.8
10.5	11.9	10.2
10.8	10.3	10.2
11.6	10.2	9.6
	8.0	9.8
	11.0	10.6
	9.8	9.1
		9,4

8. From the following data obtain the two lines of regression equations.

Х	1	2	3	4	5	6	7	8	9
Y	9	8	10	12	11	13	14	16	15

- 9. Describe Cohort and Observational studies.
- 10. Two automatic filing machines A and B are used to fill tea in .500 gm cartons. A random sample of 100 cartons on each machine showed the following :

Tea content (in gms.)	Α	В
485-490.	12	10
490-495	18	15
495-500	20	24
500-505	22	20
505-510	24	18
510-515	4	13

Comment the performance of two machines.

- 11. Write a note on Kruskal Wallis test.
- 12. What is Probability? Differentiate between binomial and poisson distribution?
- 13. Write a detailed note on Plagiarism

# TE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.