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B PHARM
(SEM-II) THEORY EXAMINATION 2018-19
PHARMACEUTICAL BIOSTATISTICS

Time: 3 Hours | *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. Define primary data.

b. Calculate median for the following blood pressure measurements
100, 98, 101, 94, 104, 102, 108, 108.

c. Explain Bar diagram.

d. Define Karl Pearson's coefficient.

e. Two lines of regression are x + 2y = 5 and 2x + 3y = 8.
Calculate the value of correlation coefficient.

f. What are the limitations of sampling?

g. Define rank correlation coefficient.

h. Binomial Probability distribution is continuous or discrete distribution?

i. Find the probability of drawing a green ball from a box containing
6 red and 7 white balls?

j. Explain ANOVA.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Draw the Pie-Diagram to represent the following data:

Items	Food	Clothing	Rent	Medical	Others
Expenditure	1500	700	800	325	860

b. Three teachers of statistics reported mean marks of their classes consisting of 69, 64 and 71 students as 30, 26, and 18.Determine the mean marks of all the three classes.

c. What is the probability that three of six patients will be cured if the probability of a cure is 0.60?

d. An experiment is conducted to study the relationship between the shell height x and shell length y (each measured in millimeters) in Palelloidapygmaea, a limpet found attached to rocks and shells along sheltered shores in the indo-pacific area. The following information is obtained :
$\sum xx = 56.6$, $\sum y = 151.1$, $\sum xy = 311.96$, $\sum x_2 = 117.68$, $\sum y_2 = 832.85$, $n = 28$
Obtain the regression line of y on x.

e. 2% of the tablet manufactured by a company is found to defective. Find the probability that in a packet of 200 tablets not more than 3 tablets will come out to be defective.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Compute the coefficient of skewness and kurtosis based on the moments for the distribution :

Profit(lakhs)	10–20	20-30	30-40	40-50	50-60
No. of hospitals *fi*	18	20	30	22	10

(b) Calculate coefficient of correlation between x and y by the method of rank differences :

x	48	33	40	9	16	16	65	24	16	57
y	13	13	24	6	15	4	20	9	6	19

4. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) For a poission distribution prove that: $p(r+1) = \frac{m}{r+1}\, p(r)$

(b) If mean and variance of Binomial distribution is 20 and 2 then find n, p, q.

5. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) Set up ANOVA for the following data. Also discuss the hypothesis:

X_1	X_2	X_3
8	7	12
10	5	9
7	10	13
14	9	12
11	9	14

Given that $F_{(2.12)} = 3.88$ at 5% level of significance.

(b) Write short notes on (i) Z-test (ii) F-test (iii) level of significance

6. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) Construct a histogram, frequency polygon and frequency curve for the following distribution of marks in a final exam.

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	4	13	22	15	10	10	5	1

(b) What is sampling? Define random sampling and non-random sampling.

7. **Attempt any *one* part of the following:** **10 x 1 = 10**

(a) What do you know about dispersion? What purpose does measure dispersion serve? Also explain the standard deviation and its mathematical properties.

(b) A drug is given to 10 patients and the increments in their blood pressure were recorded to be 3, 6, –2, 4, –3, 4, 6, 0, 0, 2. Is it reasonable to believe that the drug has no effect on change of blood pressure?