

SUBJECT: PHARMACEUTICAL STATISTICS

Day: Wednesday
Date: 08/05/2019

Time: 10.00 A.M. TO 01.00 P.M.
Max. Marks: 60

S-2019-4375

N.B:

- 1) Q.No.1 and Q. No. 5 are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate full marks.
- 3) Answer to both the sections should be written in **SEPARATE** answer books.
- 4) Use of the non-programmable electronic pocket **CALCULATOR** is permissible.
- 5) The graph paper and statistical tables will be supplied at the examination center.

SECTION - I

Q.1 Explain the following terms in brief (**ANY FIVE**) : (10)

- a) Random experiment
- b) Regression coefficient
- c) Continuous random variable
- d) Poisson distribution
- e) Measures of dispersion
- f) Types of variables

Q.2 a) Using the following data, plot less than and more than ogive curves to locate the value of median. (05)

C.I.	10-20	20-30	30-40	40-50	50-60	60-70
F	10	15	25	40	18	9

b) Compute the value of coefficient of variation (C.V.) by using the following data: (05)

C.I.	0-2	2-4	4-6	6-8	8-10	10-12	12-14
F	5	15	25	34	42	27	10

Q.3 a) Compute Spearman's rank correlation coefficient by using the following data. (05)

Ranks by judge A	1	5	6	7	8	2	4	3
Ranks by judge B	1	7	6	2	8	4	5	3

b) The correlation coefficient between X and Y is 0.6. If the means of two series are 13 and 27 respectively and standard deviations are 2 and 3 respectively. Write both the regression equations and find Y if $x = 20$ (05)

Q.4 a) If the mean height of the students in a class is 165 cm with the S.D. of 5 cm. Using the normal distribution, what is the probability that a randomly selected individual will have the height more than 170 cm. (05)

b) If on an average 2 accidents take place in a manufacturing unit during a week, what is the probability that in a randomly selected week there will be no accident. (05)

P.T.O.

SECTION-II

Q.5 Attempt any five of the following: (10)

- a) Define sample
- b) Explain the term level of significance?
- c) Explain the Term 'Random Selection'.
- d) State why the 'parallel design' is preferred over 'cross over design'?
- e) Explain the concept 'Critical Area'
- f) Name any one chart used for 'Statistical Quality Control'.

Q.6 a) Following are the data in respect of the reduction in weight in kgs; over a month; using 3 types of diets A,B,C and three types of exercises : x, y, z. (05)

	Reduction in weight in kgs		
	A	B	C
x	5	11	3
y	6	10	2
z	7	12	4

Draw the ANOVA table and test whether there is a significant difference in the reduction on weight due to

- i) Different types of diets
 - ii) Different types of exercises.
- b) Prepare a detailed note on the Determination of the sample size and the factors used. (05)

Q.7 a) The result of using the newly developed drug for curing the dengue are as below: (05)

	New drug used	New drug not used (conventional method used)
Cured	80	85
Not Cured	25	65

Determine whether the newly developed drug is effective for curing the disease (Use 5% l.o.s.)

- b) On a group of Anemic patients an iron preparation was administered and the hemoglobin levels before and after the therapy are as below. (05)

	Table levels in gm %					
Before the therapy	5.6	4.8	6.5	7.5	4.5	3.5
After the therapy	6.3	5.2	6.2	7.1	5.8	4.7

Use sign test to test whether there is significant change in Hb levels after the therapy (Use 5 % Los)

Q.8 a) As per the theory, the individual are found to belong the blood groups A,B,O and AB in the ratio 2:2:5:1. When some individuals in a locality were, checked the results are A – 15 B – 17 O – 48 AB – 5 Using the χ^2 test for the goodness of fit test whether the gathered results justify the theory (Use 5% l.o.s.) (05)

- b) What do you understand the completely Randomized, Randomized block and Latin Square designs? Draw the appropriate Diagrams (05)

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