

**F.Y.B.PHARM. SEMESTER-I (CBCS - 2015 COURSE) :**  
**WINTER - 2017**

**SUBJECT : PHARMACEUTICAL STATISTICS**

Day : Monday  
Date : 20/11/2017

**W-2017-3781**

Time : 10.00 AM TO 01.00 PM  
Max. Marks : 60

**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) Answers 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 centre.

**SECTION - I**

**Q. 1** Attempt **ANY FIVE** of the following: **(10)**

- a) Give one guideline for making classes /groups.
- b) Give one example of continuous variable.
- c) Write one practice/live example of the Poisson Distribution.
- d) Define mode.
- e) Give one example of positive correlation.
- f) Define 'Statistics'.

**Q. 2** a) Draw the 'Less than' ogive for the following data in respect of the RBC count **(05)**  
(million / mm<sup>3</sup>) for men.

Count (xi)	4.2 – 4.5	4.5 – 4.8	4.8 – 5.1	5.1 – 5.4	5.4 – 5.7
No. of men(fi)	15	32	87	45	20

b) Compute the mode for the following data in respect of clotting time of blood **(05)**

Time (in min.)	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7
No. of Individuals	10	15	20	25	18

**Q. 3** a) Compute the Karl Pearson's correlation coefficient for the following data: **(05)**

Age of the child (yrs.) – X	2	3	5	8	9	13
Heart Rate / min – Y	110	100	92	85	80	75

b) The probability that a lady in the city is suffering from Anemia is 0.2. When 7 ladies at random from the city are checked; what is the probability that exactly 3 of them are suffering from Anemia. **(05)**

**Q. 4** a) Write both the Regression Equations, in a simplified form; using the following **(05)**  
data:

$$\begin{aligned} \gamma_{x,y} &= 0.7, & \bar{x} &= 3.9 & \sigma_x &= 0.8 \\ (\text{Corr. coe}) & & \bar{y} &= 1.5 & \sigma_y &= 0.5 \end{aligned}$$

If y is 2.0 then estimate the value of x.

b) Compute the coefficient of variation (C. V.) for the following data in respect **(05)**  
of the Hemoglobin value of two patients A and B.

Hb level in % gm for 'A'	12.7	11.7	11.9	12.4	12.5	11.8	12.3	12.2
Hb level in % gm for 'B'	13.2	13.1	12.9	11.6	13.4	11.9	11.7	12.4

Which of the patient has consistent Hb level?

**P. T. O.**

**SECTION - II**

- Q. 5** Attempt ANY FIVE of the following: **(10)**
- a) Define Type I and Type II error.
  - b) Define null and alternative hypothesis.
  - c) Define critical region and confidence interval.
  - d) What are different types of experimental designs?
  - e) State different types of nonparametric tests.
  - f) Define population.

- Q. 6**
- a) A manufacturer of lamps used in the operations theatre claims that the mean life of a lamp is 1400 hrs. with a standard deviation of 40 hrs. When 100 lamps were tested it showed that mean life is 1395 hrs. Test whether the claims are justified (use 5 % L.O.S.) **(05)**
  - b) A new drug to be used to cure Dengue showed following results. **(05)**

	Using New Drug	Using Conventional Method
Cured	83	57
Not Cured	27	43

Test whether the new drug is effective? (use 5 % L.O.S.)

- Q. 7**
- a) The theory states that the number of individuals having the blood group as A, B, O and AB are in the ratio 2:2:5:1  
When some individuals were checked it showed 37, 32, 87 and 13 belonging to blood groups A, B, O and AB respectively. Test whether the theory is justified. (use 5 % L.O.S.) **(05)**
  - b) Following data show the systolic Blood Pressure of two groups **(05)**

Lawyers	130	143	139	140	146	133	148	141
teachers	123	142	136	135	136	135	129	125

Using the sign test, test whether the B. P. of both the groups differ significantly. . (use 5 % L.O.S.)

- Q. 8**
- a) Following is the data in respect of the reduction of weight in kgs using three types of exercises A, B and C and three plans of diets X, Y and Z. **(05)**

	A	B	C
X	10	6	11
Y	8	9	6
Z	7	5	7

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

- i) Different Exercises
  - ii) Different Diets
- b) What do you understand by the term 'Experimental Design'? Write the different types of designs and explain any one in details. **(05)**

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