Printed Pages: 02 **Sub Code: RPH210**
Paper Id: 150238 **Roll No.** | | | | | | | | | | |

B.PHARM
(SEM II) THEORY EXAMINATION 2017-18
PHARMACEUTICAL MATHEMATICS AND BIOSTATISTICS

Time: 3 Hours ***Total Marks: 70***

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

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. Define Square Matrix.

b. If A=$\begin{bmatrix} -3 & 2 & 5 \\ 1 & 5 & 0 \\ 3 & 3 & 6 \end{bmatrix}$ and B=$\begin{bmatrix} 1 & 4 & 0 & 3 \\ 2 & -1 & 3 & -2 \\ 3 & 2 & 5 & -5 \end{bmatrix}$, Find AXB.

c. If $y = \log\left(x + \frac{1}{x}\right)$,find $\frac{dy}{dx}$.

d. If mean = 60.4, and mode = 50.2. Find median.

e. Evaluate : $\lim_{x\to 0} \frac{\sin 3x}{4x}$.

f. Evaluate: $\int \sqrt{1 - sinx}$dx.

g. If E and F are two events associated with a random experiment for which P (F) 0.35, P (E or F) =0.85, P (E and F) =0.15, find P (E).

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Solve the following equations (use by Crammer's Rule) : 2x – y + 3z = 1, x + + 2y – z=2 5y – 5z = 3.

b. Find the missing frequencies in the following distribution if median=50 & N=100.

Marks	0-20	20-40	40-60	60-80	80-100
No of students	14	?	27	?	15

c. If $\begin{bmatrix} x-y & 2x+3 \\ 2x-z & 3z+a \end{bmatrix} = \begin{bmatrix} -1 & 5 \\ 0 & 12 \end{bmatrix}$, find x, y, z and a.

d. If $x^y = y^x$ find $\frac{dy}{dx}$

e. Compute median of following data.

C.I.	0-10	10-20	20-30	30-40	40-50
Frequency	22	38	46	35	20

SECTION C

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

(a) Solve the following system of linear equations (use by Matrix method):
x + 2y + 3z=6, 2x + 4y + z=7, 3x + 2y + 9z=14.

(b) Prove that: $\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix}$ = abc $\left(1+\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)$.

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

(a) From the following data find the standard deviation and coefficient of variation :

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	4	6	10	20	10	6	4

(b) Obtain the rank correlation coefficient for the following data:

x	68	64	75	50	64	80	75	40	55	64
y	62	58	68	45	81	60	68	48	50	70

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

(a) Represent the following data by a histogram:

Daily wages (Rs)	110-115	115-120	120-125	125-130	130-140	140-160	160-180
No. of workers	6	18	25	15	12	12	8

(b) Two line of regression are given by x+2y=5 & 2x+3y=8. Calculate the value $\bar{x}$, $\bar{y}$, b_{xy}, b_{yx} & correlation coefficient (r).

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

(a) Evaluate : $\int x\cos^2 x\, dx$.

(b) Evaluate : $\lim_{x\to 0} \frac{\sqrt{2-x}-\sqrt{2+x}}{x}$.

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

(a)) Fit a Poisson distribution to the following data and calculate the Expected frequencies:

x	0	1	2	3	4	5
y	142	156	69	27	5	1

(b) If the sum of mean and variance of binomial distribution for 5 trials is1.8, find the distribution.