Printed Pages: 02 | Sub Code: RPH-210

Paper Id: 150280 | Roll No. | | | | | | | | | | |

B PHARM
(SEM-II) THEORY EXAMINATION 2018-19
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. What is the value of determinant:

$$\Delta=\begin{vmatrix}1 & 0 & 0\\ 0 & 1 & 0\\ 0 & 0 & 1\end{vmatrix}$$

b. Is the product of two matrices of order n×n and m×m possible, if m≠n?

c. Differentiate $y = \log x$ w. r. t. x

d. Find the mode of the following data: 2,3,4,3,4,5,6,3,7,3,1,0,3

e. What is the difference between correlation and regression?

f. Find the probability that a person tossing 3 fair coins get either all heads or all tails.

g. Binomial Probability distribution is continuous or discrete distribution?

SECTION B

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

a. If $A=\begin{bmatrix}2 & 3\\ 5 & 1\end{bmatrix}$ and $B=\begin{bmatrix}1 & 2\\ 3 & 1\end{bmatrix}$, find 2A-3B.

b. Evaluate $\lim_{x\to 0}\frac{a^x-b^x}{x}$.

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

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

d. Compute the coefficient of correlation between X and Y, using the following data:

X	1	3	5	7	8	10
Y	8	12	15	17	18	20

e. Two random samples gave the following data:

Sample no.	side	mean	variance
1	8	9.6	1.2
2	11	16.5	2.5

Can we conclude that the two samples have been drawn from the same normal population?

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SECTION C

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

(a) If $A=\begin{bmatrix}2 & 0 & 0\\ 0 & -5 & 0\\ 0 & 0 & 9\end{bmatrix}, B=\begin{bmatrix}1 & 0 & 0\\ 0 & 1 & 0\\ 0 & 0 & -4\end{bmatrix}, C=\begin{bmatrix}-6 & 0 & 0\\ 0 & 3 & 0\\ 0 & 0 & 4\end{bmatrix}$,
Find B + C-2A.

(b) Apply the matrix method to solve the system of equations:-

$$x + 2y - z = 3$$
$$3x - y + 2z = 1$$
$$2x - 2y + 3z = 2$$
$$x - y + z = -1$$

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

(a) If $f(x) = \frac{2x}{1+x^2}$, prove that f (tanθ) =sin2θ .

(b) Evaluate $\int_0^{\pi/2} \log \tan x \, dx$.

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

(a) For the following blood pressure measurements :100, 98, 101, 94, 104, 102, 108, 108, Calculate mean and standard deviation.

(b) 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

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

(a) Calculate the Karl Pearson's coefficient of skewness K from the following data

Age in years	11	13	12	13	15	21	25	27	28	31

(b) The lieights of 10 males of a given locallty are found to be 175, 168,155,170,152,170,175,160,160 and 165 cms. Based on this sample ,find the 95% confidence limits for the lieights of males in that locality.

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

(a) Fit a Poisson distribution to the following data :

Deaths	0	1	2	3	4
Frequency	109	65	22	3	1

(b) What is the probability that three of six patients will be cured if the probability of a cure is 0.60?

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