PAPER ID-411817

Subject Code: RPH110

Roll No: | | | | | | | | | | | | | |

BPHARM

(SEM I) THEORY EXAMINATION 2021-22

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.	If $A=\begin{bmatrix}2 & 3\\5 & 1\end{bmatrix}$ and $B=\begin{bmatrix}1 & 2\\3 & 1\end{bmatrix}$, find 2A-B.
c.	Solve $\lim_{x\to 0}\frac{3x^3+2x^2+5x}{6x+5}$.
d.	Determine the mode of the following data: 2,3,4,3,4,5,6,3,7,3,1,0,3
e.	State the differences 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.	By using Cramer's rule, solve following system of equations $x + 2y + 3z = -5,\ 3x + y - 3z = 4\ \&\ -3x + 4y + 7z = -7$
b.	For what values of a and b, the system of equations: 2x +ay+6z =8, x+ 2y+bz =5, x+y+3z = 4, has (i) a unique solution (ii) infinite many solutions (iii) no solution.
c.	If f(x) =$\frac{2x}{1+x^2}$, prove that f(tanθ) = sin 2θ
d.	Explain Pie diagram. Also represent the following data by a suitable diagram.

EXAMINATION	Number of students		
	2000	2001	2002
B. Pharma.	200	250	400
B.Tech.	250	250	300
B. Sc.	150	200	300

e.	An urn contains 10 white and 3 black balls. Another urn contains 3 white and 5 black balls. Two balls are drawn at random from the first urn and placed in the second urn and then 1 ball is taken at random from the latter. What is the probability that it is a white ball?

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SECTION C

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

(a)	Evaluate $A^2 - 3A + 9I$ if I is the identity matrix of order 3 and A= $\begin{bmatrix} 1 & -2 & 3 \\ 2 & 3 & -1 \\ -3 & 1 & 2 \end{bmatrix}$.
(b)	Let A be a square matrix then prove that: (a) A + A^T) is a symmetric matrix. (b) (A - A^T) is a skew-symmetric matrix

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

(a)	Differentiate the following function w.r.t. x, y = sin x.cos x.
(b)	Prove that $log\frac{28}{51} - log\frac{70}{69} + log\frac{85}{46} = 0$.

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

(a) Calculate the mode of following data:

Classes	0-10	10-20	20-40	40-50	50-70	70-80
Frequency	5	15	40	32	28	5

(b) Find the standard deviation from the following data:

Size x	8	9	10	11	12	13	14
Frequency	2	4	6	9	6	4	2

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

(a) The ages of husbands and wives are given in the following table:

Age of husband	x	23	27	28	29	30
Age of wife	y	18	22	23	24	25

Calculate the coefficient of correlation between x and y from the above data.

(b) Define primary data and also mention methods of collecting primary data.

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

(a) Ten individuals are chosen at random from a population and their heights are found to be in inches 63, 63, 64, 65, 66, 69, 69, 70, 70, 71. Discuss the suggestion that the mean height of universe is 65 inches. Given that for 9 degree of freedom the value of student's t and 5% level of significance is 2.262.

(b) 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