

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

Time: 3 Hours

Total Marks: 100

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

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

- a. Define Inclusive series.
- b. If A and B are two events in sample space such that $P(A)=0.4, P(B)=0.5$ and $P(A \cup B)=0.6$ Find $P(A \cap B)$.
- c. Write empirical formula.
- d. Evaluate: $\int \sqrt{1 + \cos x} dx$.
- e. If $f(x) = \frac{\sin x}{1 + \sin x}$, find $f\left(\frac{\pi}{2}\right)$.
- f. Find $\frac{dy}{dx}$ of $y = e^x \sin x$.
- g. Define regression.
- h. Explain "5% level of significance".
- i. Give the brief description of student t-test.
- j. Define test of hypothesis.

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

- a. Represent following data by a Pie-diagram.

Item	Cement	Steel	Bricks	Timber	Labour	others
Expenditure	20%	18%	10%	15%	25%	12%

- b. Two line of regression are given by $x+2y=5$ & $2x+3y=8$. Calculate the value \bar{x} , \bar{y} & correlation coefficient (r).
- c. Solve the differential equation: $(D^2+9)y = \cos 2x$
- d. 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

- e. Evaluate:
- $\int \frac{2x+1}{(x+1)(x-2)} dx$
- .

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

- (a) Compute median of following data.

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

(b) Find rank correlation:

Applicant	A	B	C	D	E	F	G	H
Marks in Physics	15	20	28	12	40	60	20	80
Marks in Chemistry	40	30	50	30	20	10	30	60

4. Attempt any *one* part of the following:

10 x 1 = 10

(a) Calculate the median of following data:

Marks more than	0	10	20	30	40	50
No. of students	50	46	40	20	10	3

(b) A problem in statistics is given to three students A, B and C whose chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ respectively. What is the probability that the problem will be solved?

5. Attempt any *one* part of the following:

10 x 1 = 10

(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) A sample of 200 persons with a particular disease was selected. Out of these 100 were given drug and other were not given any drug. The result were given below:

	Drug	No Drug	Total
Cured	65	55	120
Not Cured	35	45	80
Total	100	100	200

Test whether the drug is effective or not. Given that for 1 degree of freedom at 5% level of significance $\chi^2=3.84$

6. Attempt any *one* part of the following:

10 x 1 = 10

(a) Evaluate: $\lim_{x \rightarrow 0} \frac{\sqrt{1+x}-1}{x}$.

(b) Find the line of regression of y on x of following data:

x	10	9	8	7	6	4	3
y	8	12	7	10	8	9	6

7. Attempt any *one* part of the following:

10 x 1 = 10

(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 is 1.8, find the distribution.