

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 150205

Roll No.

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B. PHARM.

Theory Examination (Semester-II) 2015-16

PHARMACEUTICAL MATHEMATICS & BIOSTATISTICS

Time : 3 Hours

Max. Marks : 100

Note: All section, are compulsory.

Section-A

1. Attempt **all** parts. All parts carry equal marks. Write answer of all part in short. (2 × 10 = 20)

(a) Write the value of $\lim_{x \rightarrow 0} \frac{\sin 4x}{\sin 2x}$

(b) Find $\frac{d}{dx} (u.v.w)$, where u , v , and w are the functions of x .

(c) $\int \cos^3 x . dx = \dots\dots\dots$

- (d) Write an example of homogeneous differential equation.
- (e) Find the degree of $\tan\left(\frac{dy}{dx}\right) - x = 0$
- (f) Find the mean of first 10 natural numbers.
- (g) Write the relation between mean, median and mode.
- (h) Write the relation between Karl Pearson's coefficient of correlation and probable error.
- (i) If A and B are two independent events then
 $P(A \cap B) = \dots\dots\dots$
- (j) Define Discrete variable.

Section-B

2. Attempt **any five** questions from this section. (10×5=50)

- (a) Find the value of $\lim_{x \rightarrow 0} \frac{\cos 2x - 1}{\cos x - 1}$

- (b) Evaluate : $\int \frac{(1 + \log x)^3}{x} \cdot dx$
- (c) Solve $\frac{dy}{dx} - 2y = \cos 3x$
- (d) Solve $(D^2 + 5D + 4)y = 3 - 2x$
- (e) Briefly discuss the various methods for collecting primary data.
- (f) An experiment is conducted to study the relationship between the shell height x and shell length y (each measured in millimetres) in *Palloiddapygmaea*, a limpet found attached to rocks and shells along sheltered shores in the indo-pacific area. The following information is obtained :

$$\Sigma x = 56.6, \Sigma y = 151.1, \Sigma xy = 311.96, \Sigma x^2 = 117.68, \Sigma y^2 = 832.85, n = 28$$

Obtain the regression line of y on x .

- (g) If on an average one ship in every 10 wrecked, find the probability that out of 5 ships expected to arrive, 4 at least will arrive safely.

- (h) A hospital switch board receives an average of 4 emergency calls in 10 minutes interval. What is the probability that
- (i) There are at the most 2 emergency calls in a 10 minutes interval,
- (ii) There are exactly 3 emergency calls in a 10 minutes interval?

Section-C

Attempt any two questions from this section. (15×2=30)

3. Fit a Poisson distribution to the following data :

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

4. Solve : $(D^2 - 4D + 4)y = 8 (x^2 + e^{2x} + \sin 2x)$
5. 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