Printed Pages : 4

BOP125

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

PAPER ID : 150205

Roll No.

B. Pharm.

(SEM. II) THEORY EXAMINATION, 2014-15

PHARMACEUTICAL MATHEMATICS & BIOSTATISTICS

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

PART - A

1 Attempt all parts : Each parts carries 2 marks : **7×2=14**

(a) If $y = e^{x^2+2x}$ then find $\frac{dy}{dx}$.

(b) Evaluate $\int \frac{\sec^2(\log x)}{x} dx$

(c) Solve : $\left(D^2 - 5D + 6\right) y = 0$

(d) Write Empirical formula ie relation between mean, median and mode.

(e) Write recurrence formula for binomial distribution.

(f) What is the probability of drawing white ball from a bag containing 5 white and 6 red balls.

(g) Write mean and S.D. of Poisson distribution.

PART - B

2 Attempt any six parts of the following : **6×4=24**

(a) Prove that $\lim_{x \to 0} \frac{a^x - 1}{x} = \log_e a$

(b) If $y = \sqrt{\tan x + \sqrt{\tan x + \sqrt{\tan x + ...\infty}}}$ then prove that $\frac{dy}{dx} = \frac{\sec^2 x}{2y - 1}$

(c) Solve : $\left(D^2 + 7D + 12\right) y = e^{2x}$

(d) Draw a Histogram of the following data :

C.I.	0-10	10-20	20-30	30-40	40-50
Frequency	5	15	20	10	10

(e) Find out the mode from the given data

Class Integral	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	15	40	32	28	5

(f) Calculate Spearman rank correlation coefficient from following data :

R_1 (Rank of x)	5	2	1	6	7	4	3	8
R_2 (Rank of y)	5	4	1	6	7	3	2	8

(g) Find the regression line for the following data

$\Sigma x = 30, \quad \Sigma x^2 = 190, \quad \Sigma xy = 192, \quad \Sigma y = 30,$

$\Sigma y^2 = 190, \quad n = 5.$

(h) For a Binomial distribution If mean and standard deviation is 20 and 4 then find value of n, p and q.

PART - C

3 Attempt any four parts of the following : **4×8=32**

(a) If $\sin y = x \sin(a+y)$ then prove that

$$\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$$

(b) Evaluate : $\int \frac{x^2+1}{x^4+1} dx$

(c) Solve : $\left(D^2 - 5D + 6\right) y = \sin 3x$

(d) Calculate coefficient of variation (C.V.) for the following distribution

Class Interval	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	8	12	12	18	14	10

(e) The following figure related to the cost of construction of a house in Lucknow.

Items	Bricks	Steel	Cement	Timber	Labour	Misce-llaneous
Expen-diture	20%	18%	10%	15%	25%	12%

Draw a pie diagram of the above data.

(f) A sample of 200 persons with a particular disease was selected. Out of these 100 were given a drug and other were not given any drug. The results were as 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 $\chi^2 = 3.84$)