



RE-1311-12

First Year B. Pharm. Examination

April / May – 2010

Bio-State & Advance Mathematics : Paper - II

Time : 3 Hours]

[Total Marks : 70

RE-1311

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवही पर अवश्य कपवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
F.Y. B.PHARM.

Name of the Subject :
BIO-STATE & ADVANCE MATHEMATICS - 2

Subject Code No. : 1 3 1 1 Section No. (1, 2,.....): 1

Seat No. :

Student's Signature

- (2) Attempt all questions
(3) All questions are compulsory.
(4) Tie two sections separately.

Que. 1 Answer the following question, (Any five)

[10]

1. Define Mode and Median.
2. Karl Pearson's coefficient of correlation between two variables X and Y is 0.52, their covariance is 7.8. If the variance of X is 16. Find the standard deviation of Y.
3. If the regression coefficients $b_{yx} = 1.8$ and $b_{xy} = -0.7$ then what will be the value of correlation coefficient?
4. Give mathematical definition of probability.
5. A random variable x follows the Poisson law such that $P(x = k) = P(x = k + 1)$. Find the mean and variance.
6. Explain one-tailed test.
7. What is mean by Binomial distribution?

Que.2 Answer the following question. (Any four)

[16]

- (a) Find mean deviation and standard deviation for the following individual series
25, 36, 30, 28, 40, 20, 34, 32, 35
- (b) For the following frequency table calculate mean.

Life (In years)	20-40	40-60	60-80	80-100	100-120	120-140
No of person	26	19	11	14	20	15

- (c) Goals scored by team A and Team B in football match during a season were as follows. Find out which team is more stable or consistent?

No of goals scored	0	1	2	3	4	5
Team A	27	9	8	5	4	2
Team B	17	9	6	5	3	2

- (d) In an urn there are 3 red and 7 white balls. One ball is selected at random from the urn and in place of it a ball of other colour is placed. Now one ball is drawn at random from the urn. What is the probability that it is red?
- (e) The probability that India wins a cricket test match against Australia is given to be $\frac{1}{3}$. If India and Australia play three test matches. What is the probability that.
- (1) India will loss all the three matches?
 - (2) India will win at least one match?
- (f) The customer account a certain departmental store has an average balance of Rs. 120 and a standard deviation of Rs. 40. Assuming that account balance are normally distributed, find
1. What percentage of the account is over Rs. 150?
 2. What percentage of the account are between Rs. 100 and Rs. 150?

Que.3 Answer the following question (Any Three)

[9]

- (a) Find Karl Pearson's coefficient of correlation from the following series of mark secured by 10 students;

Marks in Maths	45	70	65	30	90	40	50	75	85	60
Marks in State	35	90	70	40	95	40	60	80	80	50

- (b) The correlation of coefficient between two variables x and y is 0.6. If their means are 16 and 20 and variance are 36 and 64 respectively:
- (1) Obtain two regression equations.
 - (2) Estimate the value of y when $x = 12$.
- (c) In a random sample of 500 persons from Maharashtra, 200 are found to be consumer of vegetable oil. In another sample of 400 persons from Gujarat, 200 are found to be consumer of vegetable oil. Discuss whether the data reveal a significant difference between Maharashtra and Gujarat so far as production of vegetable oil consumer is concerned
- (d) 10 oil tins are taken at random from an automatic filling machine. The mean weight of the tins is 14.5 kg and standard deviation is 0.50 kg. Does the sample mean differ significantly from the intended weight of 15 kg?
- (e) For random sample of 10 animals fed on diet A, the increase in weight in a certain period were 10, 6, 16, 17, 13, 12, 8, 14, 15, 9. For another random sample of 5 animals, fed on diet B, the increase in 21, 23, 10, 17, and 20. Check weather the estimates of the population variance from the samples are significantly different or not?

RE-1312

Instructions :

(1)

नीचे दशांशों के निशानों वाली विगतो उत्तरवही पर अवश्य लिखनी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="text" value="F.Y. B.PHARM."/>	<div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;">Student's Signature</div>
Name of the Subject :	
<input type="text" value="BIO-STATE & ADVANCE MATHEMATICS - 2"/>	
Subject Code No. : <input type="text" value="1"/> <input type="text" value="3"/> <input type="text" value="1"/> <input type="text" value="2"/>	Section No. (1, 2,.....) : <input type="text" value="2"/>

- (2) Attempt all questions
- (3) All questions are compulsory.
- (4) Tie two sections separately.

Que.4 Attempt any eleven :

[11]

1. Define Degree of differential equation.
2. What is mean by auxiliary differential equation?
3. Give the general form of a linear equation of second order.
4. What is Homogeneous differential equation?
Find derivative of $y = e^x \cdot \log x$
5. Define Laplace transform?
6. Find laplace transform of $L(x^6)$.
7. Write Bernouli's equation?
8. Define Inverse Laplace Transforms?
9. Find $L^{-1} \left\{ \frac{1}{3s+5} \right\}$
10. Define Laplace transform.
11. Solve the differential equation $(D^4 - 16)y = 0$
12. Define auxiliary equation.
13. Write any two characteristic of mathematical model
14. Define Rolle's mean value theorem?
15. Solve the differential equation $(D^2 - 4D + 4)y = 0$

Que. 5 Solve any three **[12]**

1. $y(1+x) dx + x(1+y) dy = 0$
2. $(2x + 3y - 5) dy + (3x + 2y - 5) dx = 0$
3. $(x + 2y^3) dy/dx = y$
4. Solve $y'' + 2y' - 8y = e^{3x}$
5. Solve $(D^2 + 4D + 5)y = 0$, given that when $x = 0$, $y = 1$
and $dy/dx = 2$

Que.6 Attempt any two: **[12]**

1. Write steps which are necessary for construction of a mathematical model.
 2. Find Laplace transforms for following :
 - (a) $f(x) = 2x, \quad 0 \leq x \leq 2$
 $= 3, \quad x > 2$
 - (b) $f(x) = e^x, \quad 0 < x < 1$
 $= 0, \quad x > 1$
 3. Use Laplace transforms method to solve $(D^2 + 4D + 3)y = e^{-t}$
given that $y(0) = y'(0) = 1$.
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