

2003000204040060
EXAMINATION SEPTEMBER 2024 (ATKT EXAM)
BACHELOR OF SCIENCE (BIO TECHNOLOGY) (FOURTH SEMESTER)
STATISTICAL METHODS-II

[Time: As Per Schedule]

[Max. Marks: 50]

Instructions:

1. Fill up strictly the following details on your answer book

a. Name of the Examination: **BACHELOR OF SCIENCE(BIO TECHNOLOGY) (FOURTH SEMESTER)**

b. Name of the Subject: **STATISTICAL METHODS-II**

c. Subject Code No: **2003000204040060**

2. Sketch neat and labelled diagram wherever necessary.

3. Figures to the right indicate full marks of the question.

4. All questions are compulsory.

5. Logarithmic tables and statistical tables will be supplied on request

6. Non programmable scientific calculator is allowed

Seat No:

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Student's Signature

Q.1 Answer briefly

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1. For binomial distribution has mean 3 and variance 4, then find its n, p and write probability function of binomial distribution.
2. The two regression lines are $x + 2y = 5$ and $2x + 3y = 8$, then find Means of x and y.
3. Find b_{yx} and b_{xy} using: $\bar{x} = 40, \bar{y} = 90, \sigma_x^2 = 64, \sigma_y^2 = 81, r = 0.36$.
4. If $\sum p_1 q_0 = 440, \sum p_0 q_0 = 180$ then find appropriate index number.

Q.2 A. Attempt any one.

5

1. Discuss the relation between binomial distribution and normal distribution. Also write the properties of binomial distribution.
2. Write p. d. f. of Normal distribution with its properties.

B. Attempt any TWO.

10

1. In a sample of 1000 candidates the mean of certain test is 45 and S.D 15. Assuming the normality of the distribution find the following:
 - (i) How many candidates score between 40 and 60?
 - (ii) How many candidates score above 50?

- (iii) How many candidates score below 30?
- A binomial variable x satisfies the relation $9P(x - 4) = P(x = 2)$ when $n = 6$. Find the mean, variance and $P(x > 5)$.
 - If x follows Poisson Law such that $P(x - 1) = P(x = 2)$. Find the mean and the variance. Also find $P(x = 0)$, $P(x < 3)$ and $P(0 < x < 5)$.

Q.3 A. Attempt any one.

5

- What is rank correlation coefficient? Explain the method of finding Spearman's rank correlation coefficient.
- Discuss properties of regression lines and regression coefficient.

B. Attempt any two.

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- Find rank correlation coefficient from the following data.

Doctor	1	2	3	4	5	6	7	8	9	10
I	6	4	9	8	1	2	3	10	5	7
II	1	6	5	10	3	2	4	9	7	8
III	3	5	8	4	7	10	2	1	6	9

Which pair of doctor agree most?

- From the following information find Coefficient of correlation. $n = 10, \Sigma xy = 1650$

Variable	x	y
Mean	15	12
Standard deviation	5.4	4.5

- Find the two regression equations from the following data.

X	25	22	28	26	35	20	22	40	20	18
Y	18	15	20	17	22	14	16	21	15	14

Estimate Y when X = 36 and estimate X when Y = 25.

Q.4 Answer any three of the following questions.

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- Write a detail note on fixed base method and chain base method
- Find trend by 3 and 5 yearly moving averages for the following data. Also find short term fluctuations. (Production in millions tones)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Production	160	169	181	178	123	202	200	209	218	217

3. From the following data, construct Price index and Quantity index number by Laspeyres's, Paasche's and Fishers's Method.

Commodity	Base Year		Current Year	
	Price (Rs.)	Quantity(kg)	Price(Rs.)	Quantity(kg.)
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

4. Write a detail note on cost of living index number.
