https://www.uokonline.com

This question paper contains 7 printed pages]

5722

M.A./M.Sc. (Fourth Semester)

Examination, 2020

MATHEMATICS

Paper MATH-4 O(iii)

Mathematical Statistics–II

Time Allowed : Three Hours

Maximum Marks : 70

Min. Pass Marks : 28

Note : *– Non-Programmable Scientific Calculator is allowed in this paper.*

This question paper will be divided into ***three*** *sections as under :*

Section-A ***Max. Marks-10***

This section contains 1 compulsory question comprising 10 short answer type questions (maximum 20 words answer) taking two questions from each unit. Each question shall be of one mark.

https://www.uokonline.com

https://www.uokonline.com

Section-B ***Max. Marks-25***

This section contains 10 questions, 2 questions from each unit (answer about in 250 words). Students are instructed to attempt five questions by selecting one question from each unit. Each question shall be of five marks.

Section-C ***Max. Marks-35***

This section contains five long answer type questions comprising one compulsory question (Question No. 7) of 15 marks and four questions of 10 marks each. Students are instructed to attempt total three questions with one compulsory question (answer about in 500 words) and any two more questions (answer about in 400 words) out of remaining four questions. https://www.uokonline.com

Section A

1. (*i*) Define the sampling distribution.

(*ii*) Explain the standard errors.

https://www.uokonline.com
https://www.uokonline.com
https://www.uokonline.com
https://www.uokonline.com
https://www.uokonline.com

https://www.uokonline.com

(iii) What is estimation ? Explain it.

(iv) Write the principle of Least Square Method.

(v) Discuss the efficiency.

(vi) Briefly explain the statistical method.

(vii) Write the two line of regression, y on x and x on y and also write the angle between them.

(viii) Define the multiple correlation coefficient.

(ix) Write a short note on Analysis of Variance.

(x) Discuss sign test.

Section B

UNIT-I

2. Write a short note on t-Distribution.

Or

Explain the importance of chi-square distribution over the other distribution and describe its application.

https://www.uokonline.com

https://www.uokonline.com

UNIT-II

3. Write the property of Maximum Likelihood Estimation. Also find the MLE for the parameter λ of Poisson distribution.

Or

Explain the method of minimum chi-square in estimation with a suitable example.

UNIT-III

4. Show that in a random sampling from a Normal Population, Sample Mean is a consistent estimator of Population Mean.

Or

State and prove the Cramer Rao Inequality.

UNIT-IV

5. Three variables have in pairs simple correlation coefficient given by :

$$r_{12} = 0.8,\ r_{13} = -0.7,\ r_{23} = -0.9.$$

Find the multiple correlation coefficient $R_{1.23}$ of x_1 on x_2 and x_3.

https://www.uokonline.com

https://www.uokonline.com

Or

Calculate the Karl Pearson's coefficient of correlation between x and y from the following data :

x	y
17	12
18	16
19	14
19	11
20	15
20	19
21	22
21	16
22	15
23	20

https://www.uokonline.com

UNIT-V

6. A set of 5 coins is tossed 3200 times and the number of Heads appear in each test is noted. The test is as follows :

No. of Heads	Frequency
0	80
1	570
2	1100
3	900
4	500
5	50

Test the Hypothesis that coins are unbiased.

Or

Write a short note on Non-Parametric tests.

Section C

7. (*a*) Define the following :

(*i*) Confidence or fiducial limit

(*ii*) Distribution of order statistics.

(*b*) Write a short note on Method of Moments.

8. (*a*) Show that the sampling mean is a sufficient for estimating the parameter λ in the Poisson distribution.

(*b*) Write the test of significant of single Mean ($n > 30$) in Normal distribution.

9. Show that :

$$r_{23.1} = \frac{r_{23} - r_{21} r_{31}}{\sqrt{(1 - r_{21}^2)(1 - r_{31}^2)}}.$$

10. Prove that for a 2×2 contingency table :

$$x^2 = \frac{N(ad - bc)^2}{(a+c)(b+d)(a+b)(c+d)}$$

where $N = a + b + c + d$ and a, b, c, d are all cell entries.

11. (*a*) Write a short note on Median Test.

(*b*) Define the Distribution of order statistics.

Whatsapp @ 9300930012
Send your old paper & get 10/-
अपने पुराने पेपर्स भेजे और 10 रुपये पायें,
Paytm or Google Pay से

https://www.uokonline.com
https://www.uokonline.com