

# SHRI RAMSWAROOP MEMORIAL UNIVERSITY

## End Semester Examination (2021-22)-Odd Semester

### M.Sc. (Physics) – II Year (III Sem)

**Course Name: Statistics and Error Analysis**

**Code: MPH3003**

**Time: 02 Hours**

**Max Marks: 60**

**University Roll No.**

**(To be filled by the Student)**

**Note: Please read instructions carefully:**

- The question paper has 03 sections and it is compulsory to attempt all sections.
- All questions of Section A are compulsory; questions in Section B and C contain choice.

<b>Section A: Very Short Answer type Questions</b> <b>Attempt all the questions.</b>		<b>BL</b>	<b>CLO</b>	<b>Marks (10)</b>
1.	Define conditional probability.	BL1	CLO1	02
2.	Describe random variable and mention types of it.	BL2	CLO1	02
3.	What is meant by precision?	BL1	CLO2	02
4.	Explain the term 'data mining'.	BL2	CLO3	02
5.	Discuss the importance of graphical representation of data.	BL2	CLO4	02
<b>Section B: Short Answer Type Questions</b> <b>Attempt any 03 out of 05 questions.</b>		<b>BL</b>	<b>CLO</b>	<b>Marks (30)</b>
1.	Four balls are to be drawn without replacement from a box containing 8 red and 4 white balls. If X denotes the number of red ball drawn, find the probability distribution of X?	BL3	CLO1	10
2.	Identify different sources of errors. Illustrate with relevant example.	BL3	CLO2	10
3.	Distinguish covariance and correlation. Explain with a suitable example.	BL4	CLO2	10
4.	Compare qualitative and quantitative analysis. Construct a step-wise procedure to conduct a qualitative analysis.	BL3	CLO3	10
5.	Explain least square method of curve fitting.	BL2	CLO4	10
<b>Section C: Long Answer Type Questions</b> <b>Attempt any 01 out of 04 questions.</b>		<b>BL</b>	<b>CLO</b>	<b>Marks (20)</b>
1.	Consider the density function $f(x) = 3x^2$ on the interval $[0,1]$ . Find the expected value $E(X)$ , the variance $Var(X)$ and the standard deviation $\sigma(X)$ for the density function and round your answers to four decimal places.	BL3	CLO1	20
2.	Explain in detail about the various types of errors and analyze the propagation of errors.	BL4	CLO2	20
3.	Distinguish interpolation and extrapolation with suitable example. Describe linear, polynomial, and conic extrapolation.	BL4	CLO3	20
4.	Describe linear and non-linear curve fitting. Examine goodness-of-fit	BL3	CLO4	20

	in Chi-square test.			
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