RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2014

Date : 31/05/2014	Statistic (General)	
Time : 10.30 am – 12.30 pm	Paper : IV	

- 1. Answer any four questions of the following :
 - a) Derive the partitioning of total sum of squares of observations for a one-way classified data into component sum of squares in ANOVA.
 - b) To see the amount of influence of different baby foods on the weights of babies, 3 types of baby-food were administered to 20 babies. Partial calculations of the analysis of variance table are shown below :

Sources of variation	Sum of squares		
Baby food	2898		
Error			
Total	5987		

After completing the table, test at 5% level of significance whether the 3 baby foods differ significantly. (Value of $F_{0.05}$ with appropriate degrees of freedom is 3.59)

- c) What are the three basic principles of design of experiement. Explain them.
- d) What is a linear motel? Clearly bring out the differences among 'fixed', 'mixed' and 'random' models.
- e) Explain the technique of ANOVA for testing the linearity of simple regression.
- f) Explain what you understand by 'Analysis of variance'. State the basic assumptions in an analysis of variance.
- g) Describe the moving average method for determining trend and discuss its merits and demerits.
- h) Write down the model of AR(1) process & interpret all the terms.
- 2. Answer any three questions of the following :
 - a) To know how much different types of child food influence on weight of a child, the amount in gain in weight (in pound) of 10 children in 3 months for 3 types of child food are given below :

TYPES OF CHILD FOOD

Type – I	Type – II	Type – III
2.0	2.6	3.2
2.8	2.9	2.9
3.2	2.1	2.5
		2.8

Write the mathematical model & null hypothesis describing the assumptions for testing the null hypothesis. Prepare the ANOVA table & comment.

 (4×5)

 (3×10)

Full Marks : 50

(1)

b) Three sides of an equilateral triangle were measured by 5 pupils with the following results. Are three any significant differences in the measurements of (i) The pupils, (ii) The sides of the triangle?

	Pupil					
Side	1	2	3	4	5	
1	5.44	5.41	5.43	5.42	543	
2	5.43	5.41	5.42	5.43	5.44	
3	5.45	5.43	5.43	5.43	5.44	

- c) Describe the layout of analysis of LSD.
- d) Describe the different components of a time series.
- e) Obtain the layout of the following design : An RBD with 5 treatments in 4 blocks.
- f) Explain the least square method of fitting a curvilinear trend equation.

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