# RAMAKRISHNA MISSION VIDYAMANDIRA
### (Residential Autonomous College affiliated to University of Calcutta)
**B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2017**
**SECOND YEAR [BATCH 2015-18]**
**STATISTICS (General)**

Date : 23/05/2017

Time : 11 am – 1 pm

**Paper : IV**

Full Marks : 25

## [Use a separate Answer Book for each group]

## Group – A

1. Answer **any three** questions :                                                                    [3X5]

   a) What do you mean by random sampling numbers? Explain how they can be used to draw a simple random sample without replacement. [You can cite one imaginary numerical example]

   b) Derive the standard error of sample mean in case of SRSWOR. Also state the conditions when the standard error of sample mean becomes equal in both SRSWR and SRSWOR.

   c) What is stratified random sampling? Obtain Bowley's formula of proportional allocation in stratified random sampling to determine sample size of each stratum.

   d) Write short note on any of the following:
      i) Bias in sample survey
      ii) Advantages of stratified sampling over simple random sampling.
      iii) Advantages of sampling over complete enumeration.

## Group – B

Answer **any one** question :                                                                            [1X10]

2. a) In testing the equality of means from several normal populations with common variances, why would you rather go for one-way ANOVA than doing a number of pair-wise t-tests?

   b) If in an ANOVA model, the assumption of the independence of errors is violated, what possible challenge do you foresee?

   c) In the post-ANOVA analysis in one-way set-up, how are LSDs (Least Significant Differences) arrived at?                                                                                                2+3+5

3. Describe 2-way ANOVA, with *m* observations per cell. In the event of the rejection of the hypothesis of interaction (between the two factors), justify if it is worthwhile to go for testing the equality of the levels of the either factors.                                                    6+4

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