B. Sc. (Honours) Semester-IV Examination 2017
Statistics (Allied)
Course: BSA-41

Time : Three Hours **Full Marks : 40**

Questions are of value as indicated in the margin

Answer **any four** questions

1. (a) Distinguish between
   (i) Process control and lot control
   (ii) Assignable causes and chance causes of variation.
   (b) Explain the notion of 'rational subgroups'.
   (c) How can you decide about the status of the process from a control chart? (2+2)+3+3=10

2. (a) Write a short note on 'modified control charts'.
   (b) Distinguish between 'producer's risk' and 'consumer's risk'. 6+4=10

3. (a) Describe a single sampling inspection plan.
   (b) For a lot quality protection plan, explain how can you determine the plan parameters. 3+7=10

4. (a) Distinguish between 'design of experiments' and 'design of sample surveys.'
   (b) What do you mean by 'replication' and 'local control'? Explain their respective roles in design of experiment. 4+6=10

5. (a) Give the layout of a randomized block design.
   (b) What are the advantages and disadvantages of this design?
   (c) 'Latin square design is an incomplete 3-way layout' – explain. 3+4+3=10

6. Describe the layout of a completely randomized design. Assume a proper model for this design and analyze the model 10

7. (a) The data from a Randomized Block design with 4 treatments and 4 blocks were analyzed and the following sum of squares (ss) values were obtained :
   TSS = 119.00
   SS (blocks) = 73.5
   SS (treatments) = 26.5.
   What will be the decision about the hypothesis about the equality of treatment effects? Given $F_{0.05,3,9} = 3.86$.
   (b) Write short notes on (i) OC function and (ii) ASN. 5+5=10
