B.Sc. (Honours) Examination, 2018
Semester-VI
Statistics
Course : BSC-63(BSE-1)
(Design of Experiments)

Time : 3 Hours **Full Marks : 40**

Questions are of value as indicated in the margin

Answer **any four** questions

1. What is standard Latin Square Design (LSD)? How basic principles of design of experiments are used in LSD? How many different LSD's can be generated from a standard LSD by permuting its rows and columns? When are two LSD's said to be orthogonal? Give an example of two mutually orthogonal LSDs. 2+2+2+2+2=10
2. How will you estimate the yield of a missing plot in an RBD? Discuss in detail how you will carry out the analysis of an RBD after estimating the yield of missing plot. 4+6=10
3. Write down the ANOCOVA model for RBD with one concomitant variable. Outline a method to judge whether the inclusion of the concomitant variable is worthwhile or not. If worthwhile, give the detailed analysis. 2+3+5=10
4. (a) What is a factorial experiment? In what respect is it different from a single-factor experiment?

   (b) Show that in a 2^4- factorial experiment with factors A, B, C and D, the effects AB and BCD are orthogonal. Is ACD also orthogonal to AB and BCD? (3+2)+(3+2)=10
5. The incomplete key block of a 2^5- factorial experiment involving the factors A, B, C, D and E conducted in four blocks is given below:

   (1), ab, cd, ace, ….

   Identify the other four treatment combinations in the key block. Also obtain the treatment combinations of the other three blocks. Write down the ANOVA table of the experiment. 4+3+3=10
6. How does the strip-plot experiment differ from the split-plot experiment? Discuss the layout and analysis of a strip-plot experiment in RBD. 4+6=10
7. Discuss basic principles of design of experiments. How do the size and shape of plots and blocks affect the result of a field experiment? 5+5=10
