M.Sc. (Ag.) Examination, 2018
Semester-II
Genetics and Plant Breeding
Course- GPB-502
(Principles of Cytogenetics)

Time: Three Hours **Full Mark: 50**

Questions are of value as indicated in the margin

Answer ***any five*** questions from the following

1. How DNA is packaged into chromosome? Make a brief note on Lampbrush chromosome. Draw synaptonemal complex. 4+4+2=10
2. Describe model of crossing over based on singlestrand break. Write a note on chromosome banding. 6+4=10
3. Describe different procedures of haploid production. Mention important features of haploids. Discuss importance of haploids in plant breeding. 4+3+3=10
4. Discuss the importance of synthetic polyploidy in crop improvement. Describe the production of alien addition line using nullisomic. What is the basis of aneuploid production? 3+4+3=10
5. Assuming 2n = 100, determine the chromosome number in nullisomics, monosomics, trisomics, tetrasomics, double monosomics and triple trisomics. Draw metaphase configurations of secondary trisomics. 6+4=10
6. (a) What are the causes of failure of hybridization in distant crosses? Explain with suitable examples.
   (b) Describe random chromosome assortment in simplex along with gametic output and zygotic frequencies. 6+4=10
7. Draw and describe pachytene configuration and segregation of translocation haterozygote. What is puff in case of polytene chromosome? 8+2=10
8. Write short notes on the following (***any five***) 2×5=10
   (a) Isochromosome
   (b) Univalent shift
   (c) Monoploids
   (d) Triploids
   (e) U's triangle
   (f) Somatic hybridization
   (g) Triticale
   (h) Kinetochore
