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(20516) Roll No. .....

B.Sc.(Biotech.)-I Year

NS-3459

B. Sc. (Biotechnology) Examination, May 2016

Genetics

(B-105)

(New)

Time : Three Hours] *[Maximum Marks : 50*

Note : Attempt any *Five* questions. All questions carry equal marks.

1. What do you understand by sex determination ? Describe all theories of sex determination in detail, giving examples of each. 10

2. What is the significance of crossing over (which leads to genetic recombination) to the process of evolution? Describe the cytological observations that suggest that crossing over has taken place. 5+5

3. What are the three modes of recombination in bacteria? Describe each and distinguish among the three modes of recombination, giving one point for each. 1+6+3

4. Write short notes on the following :
   (a) Barr body 2½
   (b) Polytene chromosomes 2½
   (c) Lampbrush chromosomes 2½
   (d) Pseudoalleles. 2½

5. Describe numerical aberrations of chromosomes with examples studied by you. 10

6. What do you understand by mutations ? Differentiate between spontaneous and induced mutations. Describe the role of induced mutations for economic benefit of man. 2+4+4

7. (a) What do you understand by "gene" ? Give its classical and modern concept. 5
   (b) Describe intra genic crossing over on rII locus in T_4 phage. 5

8. Explain the following :
   (a) Multiple alleles 5
   (b) Epistasis. 5

9. Write short notes on the following :

(a) Chromosome banding 2½

(b) Karyotyping 2½

(c) Euchromatin and heterochromatin 2½

(d) Interference of genes. 2½

10. Define pedigree ? The following pedigree shows the inheritance of myopia in humans. By analyzing the given pedigree, predict whether the disorder is inherited as a dominant or recessive trait. Based on your prediction, indicate the most probable genotype of each individual. 1+2+7