বিদ্যাসাগর বিশ্ববিদ্যালয়

VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2021

(Under CBCS Pattern)

Semester - III

Subject : BOTANY

Paper : C 7 - T & P

(Genetics)

Full Marks : 60 (Theory-40 + Practical-20)

Time : 3 Hours

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

(Theory)

Group-A

A. Answer any ***three*** of the following questions : 12×3=36

1. What is the principle of independent assortment? How is it related to the principle of segregation? Differentiate between imcomplete dominance and co-dominance. Briefly explain pleiotropy with suitable example. 3+3+3+3

2. What are the different types of frameshift mutations? Discuss the various mutagens which bring about induced mutations. Define muton. Briefly describe the ClB method for detection of sex linked lethal mutation. 4+3+1+4

3. What is cistron? Write a short note on mitochondrial mutations in yeast. What you mean by transposable elements. State the significance of linkage. Differentiate between autosomal and allosomal linkage. 1+4+2+2+3

4. Write a short note on molecular basis of crossing over. What is rII locus? Define recombination frequency. What is allopatric speciation? Comment on Robertsonian translocation. 4+2+1+2+3

5. What is allele frequency. Discuss the chromosome theory of inheritance. Distinguish between autopolyploidy and allopolyploid with suitable illustrations. Illustrate Reciprocal inter-chromosomal Translocation with suitable diagram. Name a human genetic disorder caused by trisomy. 1+4+3+3+1

6. What is extrachromosomal inheritance? Briefly describe inheritance patterns of kappa particles in *Paramoecium* and mention its principle. Explain the bottleneck phenomenon in the light of genetic drift and the reason behind it. 3+6+3

Group-B

B. Answer any ***two*** of the following questions : 2×2=4

1. Differentiate between nullisomy and double monosomy.

2. Define penetrance.

3. What is conditional lethal allele? Give an example.

4. Name two intercalating agents. How do they cause mutation?

(Practical)

Paper - C 7 P

(Genetics)

Marks : 20

Group-A

A. Answer any ***one*** of the followng questions : 15×1=15

1. Write the steps to be followed for studying mitosis with a freshly collected root tip. Mention the characteristic features of all stages of mitosis. 5+10

2. Name an ideal tissue of plant for studying meiotic divisional phases. Illustrate the procedure. How can you distinguish meiotic metaphase I from metaphase II? Characterize Telophase I and Anaphase II. 1+4+4+6

3. Determine the goodness of fit of anyone of two ratios of the following in consideration of fixed ratio hypothesis.
(i) 17 : 5 : 9 or, (ii) 19 : 13 : 3 15

Group-B

B. Answer any ***one*** of the followng questions : 5×1=5

1. Characterize (a) Inversion bridge and (b) Translocation ring.

2. Mention the salient features of (a) Zygotene and (b) Diplotene.

3. Which symptoms indicate (a) sickle cell anemia and (b) red-green colour blindness. Mention the causes of these maladies.