



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 3rd Semester Examination, 2019



BOTACOR07T-BOTANY (CC7)

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.*

1. Answer the following questions in brief: 1×6 = 6
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|--------------------------------------|---|
| (a) Define complete linkage. | 1 |
| (b) What is monosomy? | 1 |
| (c) What is frame shift mutation? | 1 |
| (d) Name one intercalating agent. | 1 |
| (e) Define epistasis. | 1 |
| (f) What is recombination frequency? | 1 |
2. Answer any **eight** questions from the following: 3×8 = 24
- | | |
|---|-----|
| (a) Briefly describe the difference between dominance and co-dominance. | 3 |
| (b) Differentiate between back cross and test cross. | 3 |
| (c) What are Kappa particles? Explain the inheritance pattern in <i>Paramecium</i> . | 1+2 |
| (d) Describe the meiotic behaviour of paracentric inverted chromosome. | 3 |
| (e) What are base analogues? How do they cause mutation? | 1+2 |
| (f) State the laws of probability. | 3 |
| (g) Distinguish between autopolyploids and allopolyploids. | 3 |
| (h) Mention the major types of DNA repair mechanisms. Name one DNA repair enzyme. | 2+1 |
| (i) Colour blindness is a sex linked inheritance. Explain. | 3 |
| (j) What are trisomics? Draw types of primary trisomics chromosome configurations at metaphase I. | 1+2 |
| (k) Explain the origin of bread wheat. | 3 |
| (l) What does the Hardy Weinberg's law state? What factors affect the Hardy Weinberg's equilibrium? | 1+2 |
3. Answer any **two** questions from the following: 5×2 = 10
- | | |
|---|-----|
| (a) What is <i>rII</i> locus? Explain the <i>cis-trans</i> complementation test in <i>rII</i> locus of T ₄ Phage. | 1+4 |
| (b) How does chromosomal basis of inheritance justify Mendel's Law. | 5 |
| (c) Female <i>Drosophila</i> heterozygous for ebony (e^+/e), scarlet (st^+/st) and spineless (ss^+/ss) were test crossed and the following progenies are obtained – | 2+3 |
- | | |
|----------------------------|-----|
| Wild type- | 67 |
| Ebony- | 8 |
| Ebony, scarlet- | 68 |
| Ebony, spineless- | 347 |
| Ebony, scarlet, spineless- | 78 |
| Scarlet- | 368 |
| Scarlet, Spineless- | 10 |
| Spineless- | 54 |

Determine the correct order of the genes. Calculate the map distances between the genes.

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