



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 3rd Semester Examination, 2021-22

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.
All symbols are of usual significance.*

1. Answer the following questions in brief: 1×6 = 6
 - (a) What are different types of point mutation available in nature?
 - (b) What is dosage compensation? How it is related to Barr body?
 - (c) Distinguish between dominant and recessive epistasis.
 - (d) What is tautomerism?
 - (e) What do you mean by random genetic drift?
 - (f) State the Hardy-Weinberg Law for allele and genotype frequency.

2. Answer any **eight** questions from the following: 3×8 = 24
 - (a) Colour blindness is a sex-linked inheritance — Explain. 3
 - (b) What is coupling and repulsion? In a three point cross why are double crossover types expected less frequently than either of the single crossover types? 2+1
 - (c) What is a hexaploid of three genome — Explain. 3
 - (d) What is complementation test for allelism? Why it is used? 2+1
 - (e) In a dihybrid cross, we are getting a phenotypic ratio 9:7, instead of 9:3:3:1 — Explain. 3
 - (f) Explain the addition rule and multiplication rule in probability. 3
 - (g) Define deletion and deletion loop. How deletion loop help in chromosome mapping? 1+2
 - (h) Describe the cytoplasmic inheritance pattern in petite strain of yeast. 3
 - (i) What is Robertsonian translocation? Describe the meiotic behavior of it.
 - (j) Describe the genetic event that can produce XXXY individual. 3
 - (k) How do you determine sex-linked recessive inheritance from a pedigree chart? 3
 - (l) What do you mean by bottleneck population? 3

3. Answer any *two* questions from the following: 5×2 = 10
- (a) Discuss the three major mechanism of DNA repair system. What is ROS? 4+1
- (b) An F₁ individual heterozygous of A, B and C genes was test crossed and the following progenies were obtained — 1+3+1

$$ABC / abc = 370$$

$$abc / abc = 385$$

$$Abc / abc = 45$$

$$aBC / abc = 50$$

$$ABc / abc = 2$$

$$abC / abc = 3$$

$$AbC / abc = 75$$

$$aBC / abc = 70$$

Construct the linkage map with correct order of loci and calculate the map distance of all three loci along with coefficient of correlation.

- (c) Define Trisomics. Mention different types of trisomics with their all possible meiotic behavior. 1+4
- (d) Compare the mutagenic effects of deaminating agents and base analogue. Why are X-rays a more potent mutagen than is UV-radiation? 3+2

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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