WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Supplementary Examination, 2021

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

   (a) What is an allele? 1

   (b) What are nullisomics? 1

   (c) Name one chemical mutagen. 1

   (d) What is pleiotropy? 1

   (e) What are transposons? 1

   (f) What is maternal effect? 1

2. Answer any ***eight*** questions from the following: 3×8 = 24

   (a) What type of gene interaction modifies Mendel's 9 : 3 : 3 : 1 ratio into 9 : 7 ratio? Justify your answer with suitable example. 1+2

   (b) What are complete and incomplete linkage? 3

   (c) Differentiate between paracentric and pericentric inversions. 3

   (d) Discuss the pattern of leaf variegation observed in the four O'clock plant. 3

   (e) What is the relation between crossing over and recombination? 3

   (f) What is the difference between autopolyploidy and allopolyploidy? 3

   (g) Discuss the detection of sex linked lethal mutations utilizing CIB method. 3

   (h) State the laws of probability. 3

   (i) Explain the cis-trans complementation test in rII locus of T4 phage. 3

   (j) Discuss the chromosome theory of inheritance. 3

   (k) Diagrammatically compare the pachytene configuration of a deletion heterozygote and a duplication heterozygote. 3

   (l) Write a note on Hardy-Weinberg law. 3

3. Answer any ***two*** questions from the following: 5×2 = 10

   (a) Briefly describe the DNA repair mechanism. 5

(b) What are segmental allopolyploids? Briefly describe the origin of common bread wheat. 1+4

(c) The recessive genes in linkage group V of tomatoes are ‘a’ causing absence of anthocyanin pigment, ‘hi’ causing hairless plant and ‘f’ causing jointless fruit stem. Among 3000 plants from a hybrid test cross the following phenotypes were obtained: 2+3

Hairless – 259

Jointless, Hair less – 40

Jointless – 931

Normal – 260

Anthocyaninless, Jointless, Hairless – 268

Anthocyaninless, Hairless – 941

Anthocyaninless – 32

Anthocyaninless, Jointless – 269

How were the genes in parents? Determine the linear order of genes.

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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