Total No. of Printed Pages—3

3 SEM TDC BOTH (CBCS) C 7

2023

(Nov/Dec)

BOTANY

(Core)

Paper : C–7

(Genetics)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Choose the correct answer of the following : 1×3=3

(i) A unit of recombination is known as gene / recon / cistron / mution.

(ii) In a cross between AA BB × aa bb, the ratio of genotype in F_2 generation between AA BB, Aa BB, Aabb, aabb would be 9 : 3 : 3 : 1 / 1 : 2 : 2 : 1 / 7 : 5 : 3 : 1 / 2 : 1 : 1 : 2.

(iii) Crossing-over occurs during leptotene / zygotene / pachytene / diakinesis.

(b) Fill in the blanks : 1×2=2

(i) Mutation theory was proposed by _____.

(ii) The chromosome number in nullisomic is _____.

2. Write short notes on any *three* of the following : 4×3=12

(a) Allelomorph

(b) Epistasis

(c) Gene mapping

(d) Speciation

(e) Mutagens

3. What is extra nuclear inheritance? How can we say that a particular inheritance is cytoplasmic and not genetic? Give an account of cytoplasmic inheritance with special reference to plastid inheritance. 1+3+8=12

Or

Write short notes on the following : 6+6=12

(a) Position effect

(b) Translocation

(Continued)

4. What is linkage? Differentiate between complete and incomplete linkage. Describe briefly the significance of linkage. 2+8+2=12

Or

Write the differences between the following : 4×3=12

(a) Autopolyploidy and Allopolyploidy

(b) Duplication and Deletion

(c) Euchromatin and Heterochromatin

5. What are monohybrid and dihybrid experiments? Define 'law of independent assortment'. Explain with an example that Mendel's law of independent assortment is not universally applicable. 2+3+7=12

Or

Define gene mutation. How different types of radiation can cause mutation? Explain clearly the CIB method for the detection of gene mutation. 1+3+8=12

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