3 SEM TDC BOTH (CBCS) C 7

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(Held in April–May, 2021)

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. Choose the correct answer of the following :

$1 \times 5 = 5$

(a) Segregation of genes takes place during metaphase/anaphase/prophase/zygote formation.

(b) The phenotypic ratio of a haploid organism is $1 : 2 : 1/3 : 1/1 : 1/9 : 3 : 3 : 1$.

(c) Variability may originate during meiosis due to crossing-over/chromosomal aberrations/polyploidy/mutations.

(2)

(d) Frameshift mutations occur when base is deleted/added/added or deleted/None of these.

(e) A well-known autosomal abnormality at birth is Klinefelter's syndrome/Down's syndrome/Patau's syndrome/Turner's syndrome.

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

(a) Genetic drift

(b) Epistasis

(c) Position effect

(d) Reciprocal translocation

(e) Allelomorph

3. What do you mean by extra-chromosomal inheritance? How does it differ from Mendelian inheritance? Describe it with suitable example. $2+2+8=12$

Or

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

(a) Inheritance of Kappa particle in paramecia

(b) Variegation in four o'clock plant

(**3**)

4. 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

Or

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

(a) Incomplete   dominance   and Codominance

(b) Interference and Coincidences

(c) Euploidy and Aneuploidy

5. What is law of independent assortment? Why is it not universally accepted? Illustrate it with suitable example.   2+2+8=12

Or

What is crossing-over? How does it differ from chiasma? Describe briefly the mechanism of crossing over.   2+2+8=12

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