

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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B.A./B.Sc. (General) 1st Semester

(1129)

BOTANY

Paper : B Cell Biology

Time Allowed : Three Hours]

[Maximum Marks : 36

Note :— (1) Attempt **five** questions in all including Question No. 1, which is compulsory and selecting **one** question from each Unit.

(2) Draw well-labelled diagrams in support of your answers.

1. (A) Choose the correct answer out of the given options :

(i) In a chromosome, the genetic information is stored in :

- (a) Histone proteins (b) Non-histone proteins
(c) Lipids (d) Deoxy-ribonucleic acid

(ii) Calcium and magnesium pectates are components of :

- (a) Plasma membrane (b) Primary cell wall
(c) Secondary cell wall (d) Middle lamella

(iii) The genes which are constantly expressing themselves in a cell are known as :

- (a) Constitutive genes (b) Luxury genes
(c) Inducible genes (d) Repressible genes

- (iv) If the loss of segment takes place in both the homologous chromosomes at the same point, the process is called :
- Terminal Deficiency
 - Interstitial Deficiency
 - Homozygous Deficiency
 - Heterozygous Deficiency
- (v) Crossing over (the process of exchange of genetic material between the non-sister chromatids of homologous chromosomes) takes place in which phase of meiosis :
- Prophase I
 - Prophase II
 - Metaphase I
 - Metaphase II
- (vi) The number of base pairs per turn in left handed helical Z-DNA is :
- 9
 - 10
 - 11
 - 12

$$1 \times 6 = 6$$

(B) Fill in the blanks :

- Aerobic respiration in a cell takes place in an organelle known as _____.
- The non-essential sequences spliced out of the primary transcript are known as _____.
- Lampbrush chromosomes are in _____ stage of meiosis.
- Double metaphasic plate is seen during division _____.
- RNA polymerase binds itself to _____ site of DNA template during transcription.
- The failure of separation of homologous chromosomes during gamete formation is known as _____.

$$1 \times 6 = 6$$

UNIT—I

2. Write notes on the following :
(a) Plasma membrane.
(b) Lysosomes. 3+3
3. Discuss in detail the structure of mitochondria along with well-labelled diagrams. Why it is called a semi-autonomous organelle ?
6

UNIT—II

4. Explain the following :
(a) Deficiency or deletion.
(b) Polytene chromosomes. 3+3
5. Describe the following terms :
(a) Allopolyploid.
(b) Non-disjunction. 3+3

UNIT—III

6. Write an account of DNA replication with the help of well-labelled diagrams. 6
7. Briefly discuss the following :
(a) Metaphase II
(b) Nucleosome. 3+3

UNIT—IV

8. Describe the mechanism of Translation (i.e. synthesis of proteins) in detail. 6
9. Explain the following :
(a) Characteristic of Genetic code.
(b) Inducible operon system (LAC OPERON). 3+3