

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

0	0	0	1
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B.A./B.Sc. (General) 1st Semester
1128

BOTANY

Paper-B : Cell Biology

Time Allowed : Three Hours]

[Maximum Marks : 36]

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

1. (A) Multiple choice questions :

- (i) The linker DNA connecting two nucleosomes contains the following histone molecule :
- (a) H1 (b) H2
(c) H3 (d) H4
- (ii) The inner membrane of mitochondria invaginates into finger-like infolds known as :
- (a) Granules (b) Cristae
(c) Thylakoids (d) Cisternae
- (iii) The segments not required during translation and hence removed during splicing from mRNA are called :
- (a) Introns (b) Exons
(c) Mutons (d) Cistrons
- (iv) Double trisomy is represented by :
- (a) $2n + 1$ (b) $2n + 1 + 1$
(c) $2n - 1$ (d) $2n - 1 - 1$

- (v) RNA primer required during DNA replication is synthesized by the enzyme :
- (a) DNA polymerase
 - (b) RNA polymerase
 - (c) Primase
 - (d) Reverse transcriptase
- (vi) Double metaphasic plate is seen during the following division :
- (a) Meiosis I
 - (b) Meiosis II
 - (c) Both Meiosis I and II
 - (d) Mitosis
- $1 \times 6 = 6$

(B) Fill in the blanks :

- (i) Lampbrush chromosomes are in _____ stage of meiosis.
 - (ii) DNA is a double stranded helical macro-molecule made up of subunits known as _____.
 - (iii) Various enzymes contained by lysosomes, which act on acidic pH, are generally known as _____.
 - (iv) Coupling factors ($CF_0 - CF_1$) present in thylakoids of chloroplast are involved in process of _____.
 - (v) The condensed, darkly stained and late replicating part of chromatin is known as _____.
 - (vi) RNA polymerase binds itself to the _____ region of DNA template during transcription.
- $1 \times 6 = 6$

UNIT—I

2. What are Ribosomes ? Discuss in detail the ultra-structure of an eukaryotic ribosome along with well labelled diagrams. 6
3. Write in detail the structure of mitochondria along with well-labelled diagrams. Why it is called a semi-autonomous organelle ? 6

UNIT—II

4. What is Duplication ? Give its types, effects and importance. 6
5. Write short notes on the following :
 - (a) Polytene chromosomes
 - (b) Polyploidy. 3+3=6

UNIT—III

6. Give detailed mechanism of DNA replication with the help of well-labelled diagrams. 6
7. Briefly discuss the following :
 - (a) Synaptonemal complex
 - (b) Nucleosome. 3+3=6

UNIT—IV

8. Describe the structure and functions of various types of RNAs involved in the process of Translation. 6
9. Describe in detail the regulation of gene activity with respect to Lac operon system. 6