

(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) 1<sup>st</sup> 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

1×6=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. 1×6=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