

**B.Sc. (Part-II) Semester-IV Examination**  
**BOTANY**  
**(Cell Biology, Genetics and Biochemistry)**

Time : Three Hours]

[Maximum Marks : 80

**Note** :— (1) There are Seven questions in all.

(2) Q. No. 1 is compulsory and carries 8 marks.

(3) Q. No. 2 to 7 carry equal marks.

(4) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) Mendel performed Hybridization experiments in \_\_\_\_\_ plants. ½

(ii) \_\_\_\_\_ is called as power house of a cell. ½

(iii) Vacuole in the plant cell is bound by a membrane called as \_\_\_\_\_. ½

(iv) Phenotypic ratio of monohybrid cross is \_\_\_\_\_. ½

(B) Choose the correct alternative (MCQs) :

(v) Chromosome ends are called as \_\_\_\_\_. ½

(a) Satellite

(b) Telomere

(c) Centromere

(d) Kinetochore

(vi) The protein part of enzyme is \_\_\_\_\_. ½

(a) Vitamins

(b) Holoenzyme

(b) Apoenzyme

(d) Prosthetic group

(vii) The loss of chromosome segment is known as : ½

(a) Duplication

(b) Deletion

(c) Inversion

(d) Translocation

(viii) The site of photosynthesis in plant cell is : ½

(a) Mitochondria

(b) Golgi Complex

(c) Chloroplast

(d) Nucleus

(C) Answer in **one** sentence :

(ix) Define Test Cross 1

(x) Define Polyploidy 1

(xi) Give one example of Disaccharides 1

(xii) Define linkage. 1

2. Explain :

(a) Functions of cell wall. 4

(b) Ultrastructure of Nuclear membrane. 4

(c) Fluid mosaic model of plasma membrane. 4

**OR**

- (d) Functions of Plasma membrane. 4
- (e) Structure of Chloroplast. 4
- (f) Difference between Prokaryotic and Eukaryotic cells. 4
3. Describe :
- (g) Prophase and Metaphase in Mitosis. 6
- (h) Structure and functions of Endoplasmic reticulum. 6
- OR**
- (i) Zygotene and Pachytene in Meiosis. 6
- (j) Structure and functions of Mitochondria. 6
4. Explain :
- (k) Telomers 4
- (l) Duplication 4
- (m) Allopolyploidy 4
- OR**
- (n) Morphology of chromosome 4
- (o) Deletion 4
- (p) Trisomy. 4
5. In sweet pea, the genes C and P when come together, produce purple flowers. But when either C or P is present alone, it produces white flowers.
- What flower colours and their proportions will be produced in following crosses : 12
- (i)  $CCPp \times ccPp$  (ii)  $CcPp \times ccPP$
- (iii)  $CcPp \times ccPp$  (iv)  $ccPP \times CCpp$
- OR**
- (q) Dihybrid cross with suitable example. 6
- (r) Incomplete dominance with suitable example. 6
6. Comment on :
- (s) Complete linkage 4
- (t) Spontaneous Mutations 4
- (u) Mitochondrial DNA. 4
- OR**
- (v) Types of crossing-over. 4
- (w) Induced Mutations 4
- (x) Chloroplast DNA 4
7. Comment on :
- (a) Holoenzyme 4
- (b) Induced fit model of Enzyme action. 4
- (c) Structure of Starch. 4
- OR**
- (d) Isomerases and Oxido-reductase. 4
- (e) Lock and Key Model of Enzyme action. 4
- (f) Functions of Monosaccharides. 4