



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. $\frac{1}{2}$

(ii) _____ is called as power house of a cell. $\frac{1}{2}$

(iii) Vacuole in the plant cell is bound by a membrane called as _____. $\frac{1}{2}$

(iv) Phenotypic ratio of monohybrid cross is _____. $\frac{1}{2}$

(B) Choose the correct alternative (MCQs) :

(v) Chromosome ends are called as _____. $\frac{1}{2}$

(a) Satellite

(b) Telomere

(c) Centromere

(d) Kinetochore

(vi) The protein part of enzyme is _____. $\frac{1}{2}$

(a) Vitamins

(b) Holoenzyme

(c) Apoenzyme

(d) Prosthetic group

(vii) The loss of chromosome segment is known as : $\frac{1}{2}$

(a) Duplication

(b) Deletion

(c) Inversion

(d) Translocation

(viii) The site of photosynthesis in plant cell is : $\frac{1}{2}$

(a) Mitochondria

(b) Golgi Complex

(c) Chloroplast

(d) Nucleus

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

(ix) Define Test Cross $\frac{1}{2}$

(x) Define Polyploidy $\frac{1}{2}$

(xi) Give one example of Disaccharides $\frac{1}{2}$

(xii) Define linkage. $\frac{1}{2}$

2. Explain :

(a) Functions of cell wall. $\frac{4}{4}$

(b) Ultrastructure of Nuclear membrane. $\frac{4}{4}$

(c) Fluid mosaic model of plasma membrane. $\frac{4}{4}$

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