AU–111

B.Sc. (Part—II) Semester—IV Examination

BOTANY

(Cell Biology, Genetics and Biochemistry)

Time : Three Hours] [Maximum Marks : 80

N.B. :— (1) There are **seven** questions in all.

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

(3) Question Nos. **2** to **7** carry equal marks.

(4) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) The function of Chloroplast is _____ . ½

(ii) The number of Chromosome is reduced to half in _____ Cell division. ½

(iii) Alternative forms of a gene are known as _____ . ½

(iv) The Characters which is expressed in F_1 generation is known as _____ . ½

(B) Choose the correct alternative (MCQs) :

(v) Vacuole in plant cell is bound by a membrane called as _____ . ½

(a) Chromoplast

(b) Chloroplast

(c) Tonoplast

(d) Chromatophores

(vi) Gene mutations are due to _____ . ½

(a) Linkage and crossing over

(b) Changes in base sequences

(c) Loss of chromosome

(d) Duplication of chromosomes

(vii) Monosomics are _____ . ½

(a) 2n – 1

(b) 2n + 1

(c) n

(d) 2n + 2

(viii) The Simplest monosaccharide with six carbon atoms amongst the following is _____ . ½

(a) Erythrose

(b) Ribose

(c) Glyceraldehyde

(d) Glucose

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

(ix) Define Karyokinesis. 1

(x) Define aneuploidy. 1

(xi) What is back cross ? 1

(xii) Define Linkage. 1

2. Explain :

(a) Prokaryotic cell 4

(b) Structure of cell wall 4

(c) Fluid mosaic model of plasma membrane. 4

OR

(d) Structure of chloroplast 4

(e) Functions of plasma membrane 4

(f) Nucleolus. 4

3. Explain :

(g) Structure and functions of Endoplasmic reticulum. 6

(h) Zygotene and Pachytene. 6

OR

(i) Structure and functions of Mitochondria. 6

(j) Mitotic stages in plants. 6

4. Explain :

(k) Translocation. 4

(l) Structure of Chromosome. 4

(m) Allopolyploidy. 4

OR

(n) Trisomy. 4

(o) Duplications. 4

(p) Centromere. 4

5. In Pea, plant with yellow seed coat(Y) is dominant over green seed coat(y) Round seed shape(R) is dominant over wrinkled(r) seed.

What phenotypic ratio would be obtained in F_2 of the following crosses ?

(i) YyRr × YyRR

(ii) YyRr × YyRr

(iii) YyRr × yyRR

(iv) Yyrr × yyrr. 12

OR

Explain :

(q) Incomplete dominance with suitable example. 6

(r) Epistasis with example. 6

6. Comment on :

(s) Significance of crossing over 4

(t) Complete linkage 4

(u) Chloroplast DNA. 4

OR

(v) Physical mutagens 4

(w) Transversion 4

(x) Mitochondrial DNA. 4

7. Comment on :

(a) Isomerase 4

(b) Lock and key model of enzyme action 4

(c) Functions of monosaccharides. 4

OR

(d) Hydrolases 4

(e) Concept of Holoenzyme 4

(f) Functions of polysaccharides. 4