AR – 564

Fourth Semester B. Sc. (Part – II) Examination

BOTANY

(Cell Biology, Genetics and Biochemistry)

P. Pages : 7

Time : Three Hours] [Max. Marks : 80

Note : (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 thread like network of DNA and protein inside the nucleoplasm is known as ————. $\frac{1}{2}$

(ii) The changes or modifications in the structure of an individual chromosome are known as ————. $\frac{1}{2}$

(iii) The phenomenon of inheritance of genes together from one generation to another generations is known as ————. $\frac{1}{2}$

(iv) Protein part of the Holoenzyme is known as ———. $\frac{1}{2}$

(B) Choose the correct alternatives (MCQ)

(v) During cell division when chromosomes moves and arranged at equatorial region of a cell, a phase in mitosis is known as :

(a) Prophase (b) Metaphase

(c) Anaphase (d) Telophase $\frac{1}{2}$

(vi) The F_2 phenotypic ratio in the complimentary factor is :

(a) 9:3:4 (b) 9:3:3:1

(c) 9:7 (d) 12:3:1 $\frac{1}{2}$

(vii) When a segment of chromosome is transferred to other non-homologous chromosome, the aberrations are known as :

(a) Translocations (b) Deletions

(c) Duplications (d) Inversions. $\frac{1}{2}$

7. Explain :—

(a) Concept of co-enzymes and co-factors. 6

(b) Structure and functions of Disaccharides. 6

OR

(c) Characters of Enzymes. 6

(d) Induced fit model of Enzyme action. 6

colour.

Determine the proportions of offsprings with glume colour in the following crosses :

(i) Ppqq x ppqq

(ii) ppQQ x Ppqq

(iii) PPQq x PpQq

(iv) Ppqq x ppQq 12

6. Comment on :—

(u) Induced mutations. 4

(v) Copy choice theory of crossing over. 4

(w) Mitochondrial DNA (MT_{DNA}) 4

OR

(x) Complete linkage 4

(y) Physical mutagens. 4

(z) Significance of crossing over. 4

(viii) A type of anexploidy in which two homologous chromosome or a pair is lost it is known as :

(a) Monosomy (b) Trisomy

(c) Tetrasomy (d) Nullisomy $\frac{1}{2}$

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

(ix) What is plasma membrane ? 1

(x) Define Monohybrid cross. 1

(xi) What are dominant characters ? 1

(xii) Define In-complete linkage. 1

2. Explain :—

(a) Eukaryotic plant cell. 4

(b) Fluid mosaic model of plasma membrane. 4

(c) Functions of Nucleus. 4

OR

(d) Structure of cell wall. 4

(e) Nuclear membrane. 4

(f) Functions of Chloroplast. 4

3. Explain :—

(g) Functions of Endoplasmic reticulum. 4

(h) Structure of Ribosome. 4

(i) Metaphase in Mitosis. 4

OR

(j) Functions of Golgi complex. 4

(k) Structure of Mitochondria. 4

(l) Zygotene in Meiosis. 4

4. Comment on :—

(m) Deletions. 4

(n) Inversion. 4

(o) Allopolyploidy. 4

OR

(p) Telomere. 4

(q) Duplication. 4

(r) Trisomy. 4

5. Explain :—

(s) Dihybrid cross with suitable example. 6

(t) Incomplete dominance with suitable example. 6

OR

In Jower gene P and Q interacts to produce glume colours.

Dominant genes P and Q together produce redish pink colour. Gene P alone produces blakish pink colour.
The own effect of Q is not seen if P is absent; therefore pQ and pq produce brown