

- (f) How do you explain that relative lowering of vapour pressure is a colligative property? 6 × 1 = 6

BOTANY Paper-A

(Plant Diversity-II)

Time Allowed : 3 Hours

Max. Marks : 36

- Note:**
1. Attempt five questions in all.
 2. Question No. 1 is compulsory.
 3. Attempt four more questions, selecting one from each unit.
 4. Draw well labelled diagrams wherever necessary.

1. (a) Multiple Choice Questions :

- (i) Prominent vallecular canals are characteristic feature of which part of *Equisetum* aerial stem ?
(a) Pith (b) Cortex
(c) Endodermis (d) Pericycle
- (ii) Heterosporous condition is seen in :
(a) *Rhynia* (b) *Equisetum*
(c) *Selaginella* (d) *Pteris*
- (iii) Branched, multicellular and obliquely, septate rhizoids occur in :
(a) *Funaria* (b) *Anthoceros*
(c) *Riccia* (d) *Marchantia*
- (iv) In *Selaginella* stem trabeculae represents modified
(a) Epidermal cells (b) Cortical cells
(c) Endodermal cells (d) Vascular tissue
- (v) In *Funaria* the number of peristome teeth in two rows are :
(a) 16 + 16 (b) 08 + 08
(c) 16 + 08 (d) absent
- (vi) In *Marchantia* sporogonium, elaters help in :
(a) Spore dispersal (b) Nourishment
(c) Conduction (d) Mechanical support 6 × 1 = 6

(b) Fill in the blanks :

- (i) In *Pteris* the fertile leaf bearing sporangia is called
- (ii) Small tongue-shaped outgrowth present at the base on the adaxial side of young leaf of *Selaginella* is known as
- (iii) Capsule in *Anthoceros* grows constantly due to the presence of meristem.
- (iv) is commonly called Cord Moss.
- (v) *Riccia* thallus internally shows differentiation into storage and zones.
- (vi) The sporogonium of *Funaria* is differentiated into foot, and capsule. 6 × 1 = 6

Unit – I

2. (a) Give graphic representation of life cycle in *Riccia*.
- (b) Write briefly about rhizoids in *Riccia*. 4, 2
3. Give an illustrated account of mature sporogonium of *Marchantia*. 6

Unit – II

4. Draw L.S. of mature sporogonium of *Anthoceros*. 6
5. Write brief notes on :
 - (a) Protonema in *Funaria*.
 - (b) Peristome teeth in *Funaria*. 3, 3

Unit – III

6. Write short notes on any two of the following :
 - (a) Rhizophores of *Selaginella*
 - (b) Heterospory and its importance 3, 3
 - (c) Sporangiferous spike of *Selaginella*. 6
7. Describe the structure of sporophyte of *Rhynia*.

Unit – IV

8. (a) Describe the structure of elaters and their functions in *Equisetum*. 3, 3
- (b) Give a brief account of *Equisetum* strobilus.
9. (a) Draw T.S. Petiole of *Pteris*. 3, 3
- (b) Write a brief note on *Pteris* prothallus.

Time Allowed : 3 Hours**Max. Marks : 36**

Note: Attempt five questions in all. Question No. 1 is compulsory and select one question from each unit.

1. (a) MCQ's (Choose the right answer) :

(i) Genotypic ratio of monohybrid cross is :

(a) 2 : 2

(b) 1 : 2 : 1

(c) 1 : 1

(d) 9 : 3 : 3 : 1

(ii) Which of the following is not category of Chemical mutagen ?

(a) Base modifying

(b) Base analogue

(c) Intercalating compound

(d) Ionising radiations

(iii) Chromosomal theory of inheritance was proposed by :

(a) Mendel

(b) Morgan

(c) Sutton and Boveri

(d) Bridges

(iv) Karyotype of *Drosophila* has following pair of chromosomes :

(a) 4

(b) 8

(c) 23

(d) 10

(v) Mutagenic effect of X-ray was first observed by:

(a) Morgan

(b) Beadle

(c) Muller

(d) De Vries

(vi) Which of the following is an example of co-dominance ?

(a) Flower colour in *Lathyrus*

(b) Fur colour in mice

(c) Hair colour in cattle

(d) ABO blood group in man

(b) Fill up :

(vii) is a replacement of purine with pyrimidine of vice-versa in DNA.

(viii) The phenomenon of masking of expression of a gene by another non-allelic gene is called

(ix) Genes present on the Y-chromosomes are called

(x) Mendelian factors are called as

(xi) blood group individuals are called universal donors.

(xii) F_2 ratio of 12 : 3 : 1 indicates

$$1 \times 12 = 12$$

Unit-I

2. State and explain Mendel's law of segregation with example. 6
3. Differentiate between :
- (a) Dominant and recessive gene
 - (b) Homozygote and heterozygote. 3,3

Unit-II

4. Write notes on :
- (a) Quantitative and qualitative inheritance
 - (b) Dominance and Epistasis. 3,3
5. What are supplementary genes ? Explain with example. 6

Unit-III

6. Explain chromosomal theory of inheritance in detail. 6
7. Differentiate between nuclear and extranuclear inheritance with examples. 6

Unit-IV

8. What are gene mutations ? Give mechanism of it. 6
9. Write notes on (any two) :
- (a) DNA damage and repair
 - (b) Prototroph and auxotroph
 - (c) Chemical mutagenes. 3,3

ZOOLOGY Paper-I

Biodiversity & Ecology-I (ZOO-201)

Time Allowed : 3 Hours

Max. Marks : 36

Note: 1. Question No. 1 is compulsory.

2. In all, five questions are to be attempted including the compulsory question.

3. Select any one question from each unit.

1. Explain the following :

- (a) Malpighian tubules.
- (b) Rostrum.