

D-6646

M.Sc. (IVth Semester) Examination, 2020

BOTANY

(Advanced Plant Systematics)

Time Allowed : Three Hours

Maximum Marks : 70

SECTION - A

Note : Attempt any ten questions. Each question carries one mark. **1×10=10**

Q. 1. Objective Type :

- (i) The scientific discipline concerned with naming organisms is called _____.
- (ii) Theoretically, molecular clocks are to molecular phylogenies as radiometric dating is to phylogenies that are based on the _____.
- (iii) The statement “All biological catalysts are proteins” is no more valid because of the discovery of _____.

D-6646

P.T.O.

D-6646

(2)

- (iv) The full form of AFLP _____.
- (v) _____ gave the modern classification system.
- (vi) Which of the following is incorrect regarding the advantages of molecular data for phylogenetics study ?
 - (a) They are more numerous than fossil records.
 - (b) They are easier to obtain as compared to fossil records
 - (c) Sampling bias is involved
 - (d) More clear-cut and robust phylogenetic trees can be constructed with the molecular data
- (vii) All of the following are sources of genetic variation for evolution, except :
 - (a) Mutation
 - (b) Recombination

(3)

- (c) Gene flow
 - (d) Genetic drift
- (viii) On a phylogenetic tree, which term refers to lineages that diverged from the same place ?
- (a) Sister taxa
 - (b) Rooted taxa
 - (c) Basal taxa
 - (d) Dichotomous taxa
- (ix) Which statement about the taxonomic classification system is correct ?
- (a) Kingdoms are the top category of classification
 - (b) Subspecies are the most specific category of classification
 - (c) Classes are divisions of orders
 - (d) There are more domains than kingdoms

(4)

- (x) Which eukaryotic kingdom is polyphyletic and therefore not acceptable, based on cladistics ?
- (a) Animalia
 - (b) Plantae
 - (c) Protista
 - (d) Monera
- (xi) What is true of gene duplication ?
- (a) Its occurrence is limited to diploid
 - (b) It is a type of point mutation species
 - (c) It is most similar in its effects to a deletion mutation
 - (d) It can increase the size of a genome over evolutionary time
- (xii) Regarding these sequence homology data, the principle of maximum parsimony would be applicable in :
- (a) Determining degree of sequence homology

(5)

- (b) Inferring evolutionary relatedness from the number of sequence differences
- (c) Selecting appropriate genes for comparison among species
- (d) Distinguishing introns from exons

SECTION - B

Note : Attempt any five only. **5×2=10**

Q. 2. Write notes (Very short answer in 25-30 words only) :

- (i) Plant systematics
- (ii) Homology
- (iii) Rosids
- (iv) Nuclear
- (v) Evolution
- (vi) Nomenclature
- (vii) Herbarium

D-6646

P.T.O.

(6)

SECTION - C

Note : Attempt any five only. **5×4=20**

Q. 3. Write short answer in 250 words :

- (i) Objectives and components of plant systematics
- (ii) Palynology
- (iii) Cytology
- (iv) Plant genomes
- (v) Asterids
- (vi) Cladistics
- (vii) Homoplasy and its problems

SECTION - D

Note : Attempt any three only. **3×10=30**

Q. 4. Write essay type answer with internal choice where necessary (more than 500 words) :

D-6646

(7)

- (i) Comments on taxonomic history and explain the natural systems to cladistics with suitable examples.
- (ii) Describe the botanical nomenclature.
- (iii) Explain the phylogenetics with its purpose and systems.
- (iv) Write about molecular systematics and also write about molecular markers.

Or

Describe the introduction of angiosperms and its evolutionary history.

