

2022

BOTANY

(*Molecular Biology*)

[Honours]

Paper — VIII

Full Marks : 60

Time : 3 hours

Answer from all the Groups as directed

The figures in the right-hand margin indicate marks

GROUP — A

- 1. Answer *all* the questions : 1 × 8**
- (a) Griffith discovered the phenomenon of _____.**
- (b) The part of chromosome which take up dark stain during interphase called _____.**

(Turn Over)

(2)

- (c) DNA replication takes place in _____ direction.
- (d) The expressed sequence of an eukaryotic gene is called _____.
- (e) _____ enzyme carry out transcription.
- (f) Operon concept was given by _____.
- (g) The enzyme involved in amino acid activation is _____.
- (h) m-RNA associated with several ribosomes is called _____.

GROUP – B

2. Answer any *eight* questions out of the following within *two to three* sentences : $1\frac{1}{2} \times 8$
- (a) Denaturation
 - (b) Euchromatin
 - (c) Riboviruses
 - (d) Genetic code

(3)

- (e) Introns
- (f) Ribozymes
- (g) Central dogma
- (h) Operon
- (i) Heat shock proteins
- (j) Structure of Ribosomes.

GROUP – C

3. Answer any *eight* questions out of the following within 75 words : 2×8
- (a) Cot Curves
 - (b) Nucleosomes
 - (c) Constitutive heterochromatin
 - (d) Kornberg's discovery
 - (e) Spliceosome machinery
 - (f) Enzymes involved in DNA replication

(4)

- (g) Steroid and peptide hormones
- (h) Transcription factors
- (i) Assembly of Ribosomes
- (j) Inhibitors of protein synthesis.

GROUP – D

Long answer questions within 500 words : 6×4

4. Discuss DNA as the carrier of genetic information.

Or

What is organellar DNA ? Describe mitochondrial DNA.

5. What is DNA replication ? Describe various models of DNA replication.

Or

Describe the process of RNA splicing.

(5)

6. Describe transcription process in prokaryotes.

Or

Describe gene silencing method in detail.

7. Describe various steps of protein synthesis.

Or

Describe post translational modification of proteins.

Total Number of Pages—3

IV-CCH—Bot -8

2019

BOTANY

(*Molecular Biology*)

[Honours]

Paper — VIII

Full Marks : 60

Time : 3 hours

Answer all questions

The figures in the right-hand margin indicate marks

GROUP—A

1. Answer any *nine* questions, explain in *two to five* sentences : 2 × 9

- (a) Heterochromatin
- (b) Euchromatin
- (c) Chloroplast DNA

(Turn Over)

(2)

- (d) Cot-curves
- (e) Genetic code
- (f) Central dogma
- (g) Ribozymes
- (h) RNA priming
- (i) mRNA
- (j) Regulation of lactose metabolism
- (k) Assembly of Ribosome
- (l) Charging of t-RNA.

GROUP-B

Answer all questions : 14 × 3

2. Describe Hershey and Chase experiment. What were its conclusions ?

Or

Discuss the structure of t-RNA. Add a note on its significance.

(3)

3. Discuss the mechanism of transcription in Prokaryotes.

Or

Describe the semi conservative mode of DNA replication.

4. Discuss various steps involved in eukaryotic translation.

Or

How does the regulation of transcription in Prokaryotes takes place ?

2018

BOTANY

(*Molecular Biology*)

[Honours]

Paper--BOT-8

Full Marks : 60

Time : 3 hours

**Answer nine questions from Group - A
and all questions from Group - B**

The figures in the right-hand margin indicate marks

Give labelled diagrams wherever necessary

GROUP – A

- 1. Answer any *nine* questions, explain in two-to-five sentences :** **2 × 9**
 - (a) Fraenkel-Conrats experiment**
 - (b) Cot-curves**

(Turn Over)

(2)

- (c) Mitochondrial DNA
- (d) Nucleosome
- (e) Theta mode of DNA replication
- (f) Splicesome machinery
- (g) RNA editing
- (h) Central dogma
- (i) Ribosome structure
- (j) Inhibitors of protein synthesis
- (k) Heat-shock proteins
- (l) Gene silencing.

GROUP – B

Answer all questions :

14 × 3

2. Define genetic material and briefly describe its properties. Describe the experiment of Griffith which shows DNA as genetic material.

(3)

Or

Describe double helix model of DNA with suitable diagrams. Briefly describe different forms of DNA double helix.

3. Describe semi-conservative mode of DNA replication.

Or

What is genetic code ? Explain its essential features.

4. Describe the various steps of protein synthesis.

Or

What is Operon ? Explain the operon model of gene regulation using lac-operon of E.coli.

2022

BOTANY

(*Plant Ecology and Phytogeography*)

[Honours]

Paper — IX

Full Marks : 60

Time : 3 hours

Answer from all the Groups as directed

The figures in the right-hand margin indicate marks

GROUP — A

1. Answer *all* the questions : 1 × 8

(a) The study of individual organism is known as _____.

(b) The ability to maintain a stable internal state despite of external change is called _____.

(Turn Over)

(2)

- (c) _____ water is easily available to plants.
- (d) _____ soil has highest organic matter content.
- (e) The process by which community is developed is called _____.
- (f) The transition zone between two communities is called _____.
- (g) A state of species being found in a single defined geographic location is called _____.
- (h) The pyramid of energy is always _____.

GROUP – B

2. Answer any *eight* questions out of the following : $1\frac{1}{2} \times 8$
- (a) Synecology
 - (b) Heliophytes
 - (c) Ecosystem dynamics

(3)

- (d) Fog
- (e) Hygroscopic water
- (f) Define population
- (g) Food Chain
- (h) Niche
- (i) Ecological amplitude
- (j) Continental drift.

GROUP – C

3. Answer any *eight* questions out of the following : 2×8
- (a) Hydrosphere
 - (b) Fire as the factor of Environment
 - (c) Soil profile
 - (d) Water table
 - (e) Hail

(4)

- (f) Ecotone and Edge effect
- (g) Climax concept
- (h) Food web
- (i) Principles of Energy Flow
- (j) Ecological pyramids.

GROUP – D

Long answer type questions :

6 × 4

4. What is ecology ? Describe various components of environment.

Or

Discuss light as the factor of the environment.

5. Describe the process of soil formation and its composition.

Or

Describe hydrological cycle.

(5)

6. What is plant community ? Describe the characters of community.

Or

Describe the types and process of succession.

7. What is Biogeochemical cycle ? Describe carbon cycle.

Or

What is phytogeography ? Discuss about the phytogeographical divisions of India.

2019

BOTANY

(*Plant Ecology and Phytogeography*)

[Honours]

Paper — IX

Full Marks : 60

Time : 3 hours

Answer all questions

The figures in the right-hand margin indicate marks

Give labelled diagrams wherever necessary

GROUP — A

1. Answer any *nine* of the following in *one* or *two* sentences : 2 × 9

(a) What is Ecology ?

(2)

- (b) Write different abiotic and biotic factors of an ecosystem.
- (c) What is a Ecotone ?
- (d) What do you mean by ecological succession ?
- (e) Differentiate between food chain and food web.
- (f) Schematically represent carbon cycle.
- (g) What is Endemism ?
- (h) What is a ecological pyramid ?
- (i) Differentiate between variation and adaptation.
- (j) Define continental Drift.
- (k) Name different stages of Hydrosere.
- (l) Define Synecology.

GROUP – B

Answer all questions :

14 × 3

(3)

- 2. Discuss various abiotic factors of a ecosystem and explain how they influence the vegetation of an area. 14

Or

Discuss various stages of soil formation, its composition and add a note on how soil regulates the ecosystem as an edaphic factor.

- 3. With suitable examples discuss various stages of hydrosere. 14

Or

What do you mean by biogeochemical cycles ? Discuss different biogeochemical cycles in nature and their significances.

- 4. What is a biome ? Give an account of major terrestrial biomes studied by you. 14

Or

What do you mean by phytogeography ? Give

(4)

a brief account of various phytogeographical
regions of India.

Total Number of Pages—3

IV-CCH—Bot-9

2018

BOTANY

(*Plant Ecology and Phytogeography*)

[Honours]

Paper — BOT-9

Full Marks : 60

Time : 3 hours

**Answer all questions (Instructions for Group—A
and Group—B are given separately
in question papers)**

The figures in the right-hand margin indicate marks

Give labelled diagrams wherever necessary

GROUP — A

- 1. Answer any *nine* questions, explain each in *two*
to *five* sentences : **2 × 9****

(a) Synecology

(Turn Over)

(2)

- (b) Homeostasis
- (c) Precipitation types
- (d) Hydrological cycle
- (e) Commensalism
- (f) Ecotone and edge effect
- (g) Xerosere
- (h) Ecological pyramids
- (i) Endemism
- (j) Continental drift
- (k) Theory of tolerance
- (l) Tundra biomes.

GROUP – B

Answer all questions

2. Describe the inter-relationships between the living world and the environment.

14

(3)

Or

Discuss light as an ecological factor. Explain how it influences the vegetation of an area.

3. With suitable examples discuss the different forms of seral community in Hydrosere. 14

Or

Give an account of the structure and functions of an ecosystem.

4. Describe in brief the different phytogeographical regions of India. 14

Or

What is biome ? Describe characters of tropical and temperate biomes.

2022

BOTANY

(*Plant Systematics*)

[Honours]

Paper — X

Full Marks : 60

Time : 3 hours

Answer all questions

The figures in the right-hand margin indicate marks

- 1. Answer *all* the questions :** **1 × 8**
- (a) Who proposed the binomial system of nomenclature ?**
- (b) Which is the smallest unit of classification ?**
- (c) Write the full form of ICN.**

(*Turn Over*)

(2)

- (d) _____ is the collection of living plants to illustrate relationship among plant groups.
- (e) _____ is the phylogenetic system of classification.
- (f) Linnaeus system of classification is the _____ system of classification.
- (g) Resemblances due to inheritance from a common ancestry is called _____.
- (h) The living flowering plants characterised by many extremely primitive features called _____.

2. Answer any *eight* questions within *two to three* sentences :

$1\frac{1}{2} \times 8$

- (a) Biosystematics
- (b) E-flora
- (c) Monographs
- (d) Concept of taxa
- (e) Ranks in taxonomic hierarchy

(3)

- (f) Phylogenetic system of classification
- (g) Palynology
- (h) Monophyly
- (i) Clades
- (j) Analogy.

3. Answer any *eight* questions within 75 words : 2×8

- (a) Virtual Herbarium
- (b) Two botanical gardens of India
- (c) Documentation
- (d) Principle of priority
- (e) Author citation
- (f) Contributions of Theophrastus
- (g) APG-III system of classification
- (h) Parallelism Vs Convergence

(4)

(i) Cladogram

(j) Coevolution of angiosperms and animals.

Long answer questions within 500 words : 6 × 4

4. What is Herbarium ? Write the functions of Herbarium.

Or

What are plant identification keys ? Describe two types of identification keys.

5. What is species concept ? Describe the biological species concept.

Or

Describe the rules and principles of ICN.

6. Describe the significance of palynology and cytology in taxonomy.

(5)

Or

Describe Bentham Hooker's system of classification with merits and demerits.

7. Discuss about the origin and evolution of Angiosperms.

Or

Describe the salient features of family Poaceae.

2019

BOTANY

[Honours]

Paper — X

Full Marks : 60

Time : 3 hours

Answer all questions

The figures in the right-hand margin indicate marks

GROUP — A

1. Answer any *nine* questions in *two* to *five* sentences : 2 × 9

(a) Define herbarium.

(b) Name two botanical gardens of India.

(c) Define species concept.

(Turn Over)

(2)

- (d) What is the importance of documentation in taxonomy ?
- (e) What is the major contribution of Cronquist to plant systematics ?
- (f) Differentiate between natural and phylogenetic classification.
- (g) Give two examples where phytochemistry is used in systematics.
- (h) What is the major contribution of Linnaeus to plant systematics ?
- (i) Differentiate between primitive and advanced in taxonomic terminology.
- (j) Define cladistics.
- (k) What is the significance of cladogram ?
- (l) What is the importance of biometrics ?

GROUP – B

Answer all questions :

14 × 3

- 2. Write an essay on the concept of family, genus and species in taxonomic hierarchy. 14

Or

With example discuss the principle and rules of botanical nomenclature.

- 3. Discuss the value of cytology, phytochemistry and molecular data in plant classification with examples. 14

Or

Describe Bentham and Hooker's system of classification and its merits and demerits.

- 4. Define numerical taxonomy. Discuss the principle, method and advantages of numerical taxonomy. 14

Or

Distinguish between :

- (a) Homology and Analogy

Total Number of Pages—3

IV-CCH—Bot-10

2018

BOTANY

(*Plant Systematics*)

[Honours]

Paper—BOT-10

Full Marks : 60

Time : 3 hours

Answer all questions

The figures in the right-hand margin indicate marks

Give labelled diagrams wherever necessary

GROUP — A

1. Answer any *nine* questions, explain each in *two* to *five* sentences : 2 × 9
 - (a) E flora
 - (b) Single access and multiaccess keys

(Turn Over)

(2)

- (c) Biological species concept
- (d) Typification
- (e) Cytology in relation to taxonomy
- (f) Outlines of APG System
- (g) Palynology
- (h) Merits and demerits of Hutchinson system of classification
- (i) OTU
- (j) Phenograms
- (k) Monophyly
- (l) Homology and analogy.

GROUP - B

Answer all questions

2. What is botanical gardens? Mention it's functions. Give a brief note on botanical gardens of India.

14

(3)

Or

Describe the principle and rules of ICN.

3. Give an account of classification given by Bentham and Hooker. Explain why it is natural? 14

Or

Discuss Engler and Prantle system of classification with merits and demerits.

4. Describe the origin and evolution of angiosperms. 14

Or

What is phylogenetic tree? Describe methods showing evolutionary relationship.