

[This question paper contains 4 printed pages.]

(17)

Your Roll No. 2023



Sr. No. of Question Paper : 4521

Unique Paper Code : 32161401

Name of the Paper : Molecular Biology

Name of the Course : **B.Sc. (Hons.) Botany
(C.B.C.S)**

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all.
3. Question No. **1** is compulsory.
4. **All** parts of a question should be answered together.

1. (a) Expand (**any five**) : (1×5=5)

- (i) Rf-C
- (ii) ORC
- (iii) CRP
- (iv) RISC

P.T.O.

(v) TFIID

(vi) PCNA

(b) Write the contributions of (**any five**) : (1×5=5)

(i) A. Korenberg

(ii) M. Meselson and F. Stahl

(iii) Hershey and Chase

(iv) J. Shine and L. Dalgarno

(v) George Gamow

(vi) H. Temin and D. Baltimore

(vii) J. D. Watson

(c) Define the following (any five) : (1×5=5)

(i) Repliosome

(ii) Enhancer

(iii) Okazaki fragment

(iv) Exon

(v) Ribozyme

(vi) Operon

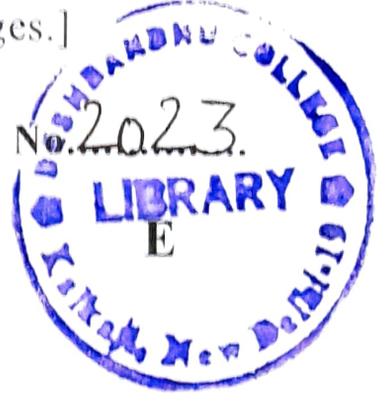
2. Differentiate between the following (**any five**): (3×5=15)
- (i) Left handed DNA and Right handed DNA
 - (ii) Euchromatin and Heterochromatin
 - (iii) Negative and Positive Gene Regulation
 - (iv) Denaturation and Renaturation
 - (v) Self Splicing and Spliceosome Mediated Splicing
 - (vi) Monocistronic and Polycistronic RNA
3. Write short note on (**any three**): (5×3=15)
- (i) Organization of DNA in Prokaryotes
 - (ii) 5' and 3' modifications in eukaryotic mRNA
 - (iii) Telomeric Replication
 - (iv) RNA interference
4. (a) Discuss in detail, two major mechanisms of transcription termination in prokaryotes. (9)
- (b) What is Central Dogma? Why RNA viruses do not follow Central Dogma? (3)
- (c) State the function of the following (**any three**): (3)
- (i) PCNA
 - (ii) Gyrase
 - (iii) SSB
 - (iv) DNA Polymerase α

5. (a) Describe briefly the *Trp* operon and how it controls the biosynthesis of aminoacid tryptophan. (9)
- (b) What is reassociation kinetics and how it can be used to plot cot curve? Also give its implications. (6)
6. (a) With the help of a well labelled diagram, explain the mechanism of initiation of DNA replication in prokaryotes. (6)
- (b) Explain the salient features of genetic code. (6)
- (c) Write down the consensus sequence for the following (**any three**): (1×3=3)
- (i) 5' splice site
 - (ii) TATA Box
 - (iii) Polyadenylation signal
 - (iv) Kozak Sequence
7. (a) Discuss in detail, the mechanism of initiation of translation in prokaryotes and compare it with that of eukaryotes. (9)
- (b) How can a single gene produce multiple protein products? Explain. (6)

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Your Roll No. 2023.



Sr. No. of Question Paper : 4567

Unique Paper Code : 32163405

Name of the Paper : Mushroom Culture and
Technology

Name of the Course : **B.Sc. (Hons) Botany (LOCF)**

Semester : IV

Duration : 2 Hours

Maximum Marks : 38

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question No. 1 is Compulsory. Attempt any **four** questions in all.
3. Except Question number 1, all other questions carry equal marks.
4. Attempt all parts of a question together.
5. Support your answers with suitable diagrams where ever necessary.

P.T.O.

1. Attempt all parts of the question together (11)

(a) Define the following (**any four**)

(i) Nutrient media

(ii) Spawn

(iii) Flush

(iv) Pasteurization

(v) Casing (4)

(b) Fill in the blanks (**any four**) (4)

(i) _____ is the fertile region of the pileus.

(ii) The immune boosting properties of mushrooms is due to the presence of _____ .

(iii) The swollen cup-like structure present at the base of some Basidiomycetous mushrooms is known as _____ .

(iv) Manure is the source of _____ for mushroom cultivation.

(v) The optimum temperature for cultivation of *Pleurotus* mushroom ranges from _____ and relative humidity ranges between 80-90%.

(c) Answer the following (**any three**) (3)

- (i) In *Agaricus*, the reproductive division takes place in
- (a) Basidiospore
 - (b) Chlamydospore
 - (c) Basidium
 - (d) Basidiocarp
- (ii) Poisonous fungi are commonly known as
- (a) Mushrooms
 - (b) Toad stools
 - (b) Fungi
 - (d) Smut
- (iii) Name the state with highest mushroom production in India
- (a) Haryana
 - (b) Punjab
 - (c) Uttar Pradesh
 - (d) Gujrat
- (iv) Preservation of mushroom below -18 degree Celsius is known as _____
- (a) Sun Drying
 - (b) Microwave drying
 - (c) Freezing
 - (d) Refrigeration

2. Differentiate between the following : (9)
- (a) Short term and Long term storage of mushrooms
 - (b) Edible and Medicinal mushrooms
 - (c) Green mould and Wet Bubble disease of mushrooms
3. Write short notes on the following (**any three**) (9)
- (a) Regional Centers of mushroom Cultivation
 - (b) Principle of Autoclave
 - (c) A recipe of mushrooms
 - (d) Methods of sterilization of substrate in *Pleurotus* cultivation
4. (a) Discuss the nutritional significance of edible mushrooms. (4.5)
- (b) Write a detailed note on medicinal value of mushrooms. (4.5)
5. (a) Discuss the policies of the Government of India regarding mushroom cultivation.
- (b) What is the cost benefit ratio of mushroom cultivation in India. (6+3)
6. Define composting and discuss various methods of composting in *Agaricus*. (9)

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Your Roll No. 2023



Sr. No. of Question Paper : 4677

Unique Paper Code : 32161402

Name of the Paper : Ecology

Name of the Course : B. Sc. (Hons.) Botany

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions in all. Question No. 1 is compulsory. **All** questions carry equal marks.
3. **All** parts of a question must be answered together.

1. (a) Define the following terms (Attempt any **five**) :
(1×5=5)

(i) Flora

(ii) Ecological amplitude

P.T.O.

- (iii) Standing crop
- (iv) Homeostasis
- (v) Primary Productivity
- (vi) Pedon
- (vii) Population

(b) Write one word answer for each of the following
(Attempt any **five**) : (1×5=5)

- (i) The fully decomposed organic matter in soil
- (ii) Interconnected network of food chains
- (iii) The organisms feeding on the dead and decayed matter
- (iv) The zone of transition representing a situation of special ecological interest between two different types of communities
- (v) The structural and functional unit of biosphere
- (vi) Plants living under shade

(c) Match the following : (1×5=5)

- | | |
|-----------------------|--|
| (i) Eolian soil | (a) Instrument used to measure light intensity |
| (ii) <i>Orobanche</i> | (b) Soil transported by wind |
| (iii) Litter | (d) Total water present in soil |
| (iv) Holard | (f) Root parasite |
| (v) Luxmeter | (g) Freshly fallen dead matter |

2. Differentiate between the following (Attempt any **three**) : (5×3=15)

- (a) Analytical Characteristics and Synthetic Characteristics
- (b) Autotrophic Succession and Heterotrophic Succession
- (c) Mor humus and Mull humus
- (d) k-selection and r- selection
- (e) Grazing Food Chain and Detritus Food Chain

3. Write short notes on the following (Attempt any **three**) : (5×3=15)

- (a) Raunkiaer's life forms
- (b) Habitat and ecological niche

- (c) Ecological pyramids
 - (d) Fire as an ecological factor
 - (e) Survivorship curves
4. (a) What are biogeochemical cycles? Explain any **one** biogeochemical cycles of your choice along with the labelled diagrams. (5)
- (b) Briefly discuss the different types of age pyramids with suitable examples. (5)
- (c) Define biotic interaction. Discuss any two positive interactions among organisms with suitable examples. (5)
5. (a) Define soil profile. Discuss along with the diagram. (5)
- (b) Briefly explain the Y shaped energy flow model in an ecosystem. (5)
- (c) Comment on light as an ecological factor. (5)
6. (a) What is Phytogeography? Discuss any four phytogeographical divisions of India. (7)
- (b) Define Ecological succession. Discuss the type of succession that will occur in a water body with the help of diagrams. (8)

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Your Roll No.

2023



Sr. No. of Question Paper : 4801

Unique Paper Code : 32161403

Name of the Paper : Plant Systematics

Name of the Course : B.Sc. (H.) Botany

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **FIVE QUESTIONS** in all including Question No. 1 which is **COMPULSORY**.
3. Attempt all parts of the question together.
4. (a) Expand the following (**any five**) : (5)
 - (i) D.C.
 - (ii) L.
 - (iii) Nom.nud.

P.T.O.

(iv) R.Br.

(v) Hook. *f.*

(vi) et.

(c) Answer the following (**any five**): (5)

(i) Name a genus commemorating a place

(ii) The alternate name of family Cruciferae

(iii) An example of autonym

(iv) Author of Flora of Delhi

(v) Significance of May 1, 1753

(vi) Type genus of family Fabaceae

(c) Fill in the blanks (**any five**): (5)

(i) The standard size of a herbarium sheet is

_____ .

(ii) _____ is an angiosperm lacking vessels.

(iii) The occurrence of similar features in different species with a common ancestry is known as _____ .

(iv) _____ is an example of journal devoted to taxonomy.

(v) _____ is the Father of genus concept.

(vi) _____ is an International Botanical Garden.

2. Write notes on the following (**any three**) : (5×3=15)

(a) Parallelism and Convergence

(b) APG

(c) Typification

(d) Principles of ICN

3. (a) Give an outline of Bentham and Hooker's **OR** Engler and Prantl system of classification. (6)

(b) "Angiosperm and their pollinators have evolved together". Comment. (4)

(c) Interpret the following (**any five**) : (1×5=5)

(i) *Rosa floribunda* 'Blessings'

(ii) *Capparis lasiantha* R.Br. ex DC.

(iii) *Stellaria media* (L.) Vill.

(iv) *Delphinium viscosum* Hook. f. et. Thomson

(v) *Triticum aestivum* Linn., nom.cons.

(vi) *Salix aurita* x *S. caprea*

4. (a) Explain the role of semantides in plant systematics with suitable examples? (6)

(b) Explain Principle of Priority citing various examples. (6)

(c) Give endings of the ranks provided by ICN (**any three**) : (3)

(i) Division

(ii) Class

(iii) Order

(iv) Family

5. Differentiate between the following (**any five**) :

(5×3=15)

(i) Homology and Analogy

- (ii) Synonym and Homonym
- (iii) Indented keys and Bracketed keys
- (iv) Flora and Monograph
- (v) Taxonomic category and Taxonomic group
- (vi) Monophyly and Polyphyly

6. Attempt **any two** of the following :

- (a) Explain the Ranaian and Englerian concept of primitive angiosperm. (7.5)
- (b) Discuss the role of palynology in plant systematics. (7.5)
- (c) What are the roles of herbaria? Name any one national and one international herbarium of repute and briefly highlight their key features. (7.5)

7. (a) What are taxonomic keys? Explain various types of multi-access keys. (9)
- (b) What is a species concept and its types? Explain any one of its types in detail. (6)

4801

6

Or

Write a note on methodology of phonetics.