

m Se Botany
April 2015

खुशी - 002

Seat Number

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BOT-1.1
Angiosperm Taxonomy
(New) (141101)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions taking **any two** questions from each section.
5. Two sections should be written in separate answers books.
6. All questions carry equal marks.
7. Draw a neat labelled diagrams wherever necessary.

SECTION - I

1. Describe the review of pre- Darwinian systems of classifications in Angiosperms. **20**
2. Describe salient features and points of biological importance of the following families. **20**
 - a) Nepenthaceae.
 - b) Orchidaceae
3. Discuss the role of: **20**
 - 1) Phytochemistry in relation to taxonomy.
 - 2) Phytogeography and ecology.
4. Write short notes on **any four**. **20**
 - a) Author citation.
 - b) Conservation of names.
 - c) Primitive carpel.
 - d) Evolution of fruit.

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- e) Phyllode theory.
- f) Rejection of names.

SECTION - II

- 5. Describe the range of floral variations, taxonomy and evolutionary trends of. **20**
 - 1) Compositae
 - 2) Graminae
- 6. Discuss the review of Post-Darwinian classifications in Angiosperms. **20**
- 7. Describe micromorphology and ultrastructure in relation to taxonomy. **20**
- 8. Write short notes on any four **20**
 - a) Retention of names.
 - b) Primitive stamens.
 - c) Evolution of inflorescence.
 - d) New names.
 - e) Principles of the code I - V.
 - f) Evolution of floral nectaries.

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BOT-1.1

**Plant Systematic-I Non Vascular Plants
(Algae, Fungi & Bryophytes)
(Old) (101)**

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer any four questions taking two questions from each section.
5. Answer to the two sections should be written in separate answer book.
6. All questions carry equal marks.
7. Draw labelled diagrams wherever necessary.

SECTION – I

1. Describe the thallus organization in Myxophyceae with suitable 20 examples and comment on their economic role in paddy fields.
2. Give an outline classification of algae according to Fritsch upto 20 orders with suitable examples.
3. Trace the evolution in gametophyte of Bryophytes. 20
4. Write notes on any four. 20
 - a) Euglenophyta.
 - b) General characters of chlorophyceae.
 - c) Algae in relation to human welfare.
 - d) Isomorphic life cycle pattern in phaeophyceae.

- e) Leaf of Polytrichum.
f) Gemma cup in Marchantia.

SECTION - II

5. Describe characteristic features, thallus structure, reproduction and life cycle of chytridiales. **20**
6. Give an account evolutionary trends in fungi. **20**
7. Give the salient features of the order Jungermanniales and state in what respect do the jungermanniales – **20**
a) differ
b) resembles to the marchantiales.
8. Write notes on **any four**. **20**
a) Taphrina.
b) Heterothallism.
c) Fungi in wood decay.
d) History of Mycology in India.
e) Amphigastria.
f) Elaterophores and elaters.

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BOT-3.1

Genetics and Plant Breeding (301)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions, taking two question from each section.
5. Answer to the two sections should be written in separate answer book.
6. All questions carry equal marks.

SECTION - I

1. What is euploidy and aneuploidy? 20
2. State brief account of genomic structural organisation of Adeno virus and Bacteriophage. 20
3. What is gene mutation? Describe various types of mutagen. 20
4. Write short notes **any four**. 20
 - a) Linkage map.
 - b) Myoglobin evolution.
 - c) Poly adenylation.
 - d) Significance of artificial vegetative reproduction.
 - e) Ribosome.
 - f) Parasexual cycle in Fungi.

SECTION - II

5. Explain structure, function and biogenesis of plasma membrane. 20
6. Describe genome organisation of Eukaryotes. 20
7. What is plant breeding? Describe pedigree method of hybridization in detail. 20
8. Write short notes any four. 20
- a) Crossing over.
 - b) RNA splicing.
 - c) Sexual reproduction in plant.
 - d) r II locus in T4 phage.
 - e) Oncogene.
 - f) Neo-Lamarckism.

Seat Number

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BOT-2.1

**Diversity of Lower Cryptogams (Algae and Fungi)
(New) (141201)**

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer to the two sections should be written in separate answer book.
5. Answer any four questions taking two questions from each section.
6. All questions carry equal marks.
7. Draw labelled diagrams wherever necessary.

SECTION - I

1. Describe the structure of Eukaryotic and Prokaryotic Algal cell.
2. Describe the range of thallus structure in phaeophyceae with suitable example. And add a note on their general characters.
3. Describe the thallus organization in cyanophyceae comment on their ecology.
4. Write short notes on any four of the following.
 - a) Summary of the principal classes in algae.
 - b) Colonial organization in algae.
 - c) Diplohaplontic type of life cycle pattern in green algae.
 - d) Cystocarp in red algae.
 - e) General characters of Euglenophyceae.
 - f) Algae in human welfare.

SECTION - II

5. Write distinguishing characters, thallus structure, Nutrition and hyphal modifications in Fungi.
6.
 - a) Economic and Ecological Importance of Lichen's
 - b) Life cycle pattern in Teliomycetes.
7. Give distinguishing characters, thallus structure type of asci and ascocarps in Ascomycota.
8. Write shot notes on **any four**.
 - a) Fungi in Biotechnology.
 - b) Types of plasmodio.
 - c) Heterothallism.
 - d) Thallus structure in Basidiomycotina.
 - e) Types of Zoospores in mastigomycotina.
 - f) Fructification in Deuteromycotina.

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BOT-4.24

Genetics and Plant Breeding Special Paper-II (424)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions taking two questions from each section.
5. All questions carry equal marks.

SECTION-I

1. What is C-value paradox? Discuss role of transposons in deviation in maize genome. 20
2. Enlist different molecular markers studied in plants. Explain how RFLP and RAPD are useful in plant breeding. 20
3. Attempt **any two** of the following. 20
 - a) Micro arrays and their applications.
 - b) Role of catalytic RNA in gene expression.
 - c) RNA polymerases.
4. Write short notes on **any four**. 20
 - a) Split genes.
 - b) Blood cell formation.
 - c) Proto- onco genesis.
 - d) Gene - trapping.
 - e) Human genome project.
 - f) Genome annotation.

SECTION-II

5. Attempt **any two** of the following. 20
- a) Chilling stress at plant and Sub cellular level.
 - b) Explain quality characters studied in carton breeding.
 - c) Explain ideotype concept for maize crop.
6. How many types of mutagenic agents used for crop improvement explain in detail. Add a note on achievements of mutation breeding. 20
7. How quality traits are improved with respect to oil seed crop discuss in detail? 20
8. Write short notes on **any four**. 20
- a) CIMMYT.
 - b) Sterility in distant hybrids.
 - c) Evolution.
 - d) Salinity tolerance.
 - e) Indian seed Act 1996.
 - f) Certified Seed production in maize.

Seat Number

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BOT-1.2

**Environmental Botany and Biostatistics
(New) (141102)**

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions, taking at least two question form each section.
5. Log table and calculators are allowed.
6. All questions carry equal marks.
7. Use separate answer book for each section.

SECTION – I

1. What is GIS? Describe the spatial and non spatial data?
2. What is water-shed management? Describe various methods and importance of watershed management.
3. What is solid wastes? Describe the management of solid wastes with reference to collection, disposal and resources recovery.
4. Write short note on **any four**.
 - a) Comment on interdisciplinary nature of environmental botany.
 - b) Food web.
 - c) Comment on Estuarine ecosystem.
 - d) Role of abiotic components in ecosystem.
 - e) Scope of remote sensing.
 - f) Comment on the characteristics of ecosystem.

SECTION - II

5. Describe the aim and various activities of 'Earth Summit'.
6. What is Kyoto protocol? Explain the mechanism of environmental management plan.
7. Find out the effect of nitrogen fertilizer on height on wheat plant at the significant level.

Sr. No.	1	2	3	4	5	6	7	8	9	10
Plant without Fertilizer	15	16	16	17	16	17	16	17	18	16
Plant with Nitrogen Fertilizer	18	20	19	22	24	19	22	20	24	26

8. Write short note on any four.
- Comment on necessity of legislation related to environment.
 - Forest conservation and wild life act 1972.
 - Merits and demerits of standard deviation.
 - Properties of central tendencies.
 - Importance of sampling.
 - Comment on water act 1976.

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BOT-2.2

Diversity of Higher Cryptogams (New)
(141202)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions, two questions from each section.
5. Answer to the two sections should be written in separate answer book.
6. All questions carry equal marks.
7. Draw labelled diagrams wherever necessary.

SECTION - I

- | | | |
|----|--|----|
| 1. | Trace the evolution in sporophytes of Bryophyta. | 20 |
| 2. | Give the distinguishing features and phylogenetic importance of Takakia. | 20 |
| 3. | "The sphagnales link the three classes of Bryophyta and is regarded as a synthetic group" Discuss. | 20 |
| 4. | Write short notes on any four. | 20 |
| | a) Contribution of kashyap. | |
| | b) Sex organs of <u>Anthoceros</u> . | |
| | c) Amphigastria. | |
| | d) Gemma cup. | |
| | e) <u>Calobryum</u> . | |
| | f) Leaf of <u>Polytrichum</u> . | |

SECTIONS - II

5. Write an essay on soral evolution in pteridophytes. 20
6. Describe the salient features of the order Lycopodiales. 20
7. a) Give distinguishing features of ophioglossales. 10
b) Outline Reimers classification of the pteridophytes. 10
8. Write short notes on any four. 20
- a) Sporophyll of Isoetes.
- b) Heterospory.
- c) Azolla sporocarp.
- d) Tassel of Osmunda.
- e) Strobilus of Equisetum.
- f) Economic importance of pteridophytes.

Seat Number.

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BOT-2.2

Plant Biochemistry and Plant Physiology (Old) (202)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Use separate answer books for each section.
5. Answer **any four** questions taking two questions from each section.
6. All questions carry equal marks.

SECTION - I

- | | | |
|----|---|----|
| 1. | Describe EMP pathway in detail. Add a note on Aerobic respiration. | 20 |
| 2. | Define hormones? Describe chemistry, classification and properties of hormones. | 20 |
| 3. | Describe redox reaction in biological system. Enlist important redox systems in living organisms. | 20 |
| 4. | Write short notes on any four . | 20 |
| | a) Hydrogen ion concentration. | |
| | b) Amino acids. | |
| | c) Emersion effect. | |
| | d) β - oxidation. | |
| | e) Terpenoids. | |
| | f) Nucleic acids. | |

SECTION - II

5. a) Describe Calvin cycle in plants. 20
b) Write an account on differences between photo respiration and aerobic respiration.
6. Explain different types of stresses on plants in detail. 20
7. a) Explain chemistry and classification of enzymes. 20
b) Describe the process of β -oxidation.
8. Write short notes on : 20
a) Senescence.
b) Ammonification.
c) Symbiotic nitrogen fixation.
d) Translocation.
e) Plant pigments.
f) Glycosides.

Seat Number

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BOT-4.34

Genetics and Plant Breeding Special Paper-III
(434)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions taking two questions from each section.
5. All questions carry equal marks.

SECTION - I

1. Describe different physical methods of gene transfer. Add a note on applications of recombinant DNA technology in crop improvement. **20**
2. How markers assisted selection is applied in plant breeding explain? **20**
3. Solve **any two** of the following. **20**
 - a) Herbicide resistance.
 - b) Somaclonal variation and it's applications.
 - c) Gene transfer through A. tumefaciens.
4. Write short notes on **any four**. **20**
 - a) Embryo culture.
 - b) Bt. Cotton.
 - c) Gene – Pyramiding.
 - d) Nucleotide Sequences.

- e) Plant databases.
- f) Micro propagation.

SECTION - II

5. Describe the protection of plant varieties and farmers right act 2001 in detail. **20**
6. Solve any two of the following. **20**
- a) Negative impact of G. M. Crops.
 - b) Proteome analysis.
 - c) How microarray technology is used for crop improvement?
7. Describe food safety assessment approval procedure for G.M. foods in India. **20**
8. Write short notes on any four. **20**
- a) HPLC.
 - b) SNP detection.
 - c) Bio-diesel crops.
 - d) Carbon credits.
 - e) Electro phoresis.
 - f) TRIPS.

Seat Number

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BOT-1.3

**Cytogenetics, Plant Breeding and Molecular Biology
(New) (141103)**

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions, taking two questions from each section.
5. Answer to the two sections should be written in separate answer book.
6. All questions carry equal marks.

SECTION – I

1. What is cell cycle ? Explain role of cyclin and cyclin dependent kinase in cell cycle regulation. 20
2. Describe cytoplasmic inheritance. Elaborate two examples of cytoplasmic inheritance found in plant system. 20
3. Explain molecular mechanism of induce and spontaneous mutation. 20
4. Write short notes on **any four**. 20
 - a) C-value paradox.
 - b) Asexual reproduction in plant.
 - c) Inbreeding depression.
 - d) RNA processing.
 - e) Post translational modification of protein.
 - f) Special types of chromosome.

SECTION - II

5. Describe organisation of chromatin and chromosome. 20
6. Explain transcription regulation in Prokaryotes with suitable examples. 20
7. a) Protein sorting. 10
b) Describe origin of replication. 10
8. Write short notes on any four. 20
- a) Euploidy.
- b) RNA splicing.
- c) Vegetative reproduction in crop plants.
- d) Heterosis.
- e) Mismatch repair.
- f) Transposons.

Seat Number

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BOT-3.34

Genetics and Plant Breeding Paper- I

(334)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Use separate answer books for each section.
5. Answer **any four** questions taking two questions from each section.
6. All questions carry equal marks.
7. Simple type calculators are allowed.

SECTION - I

1. Define components of genetic variance? How it is estimated in crop species. 20
2. Explain chromosomal aberrations. Add a note on origin of aneuploids and their applications in crop breeding. 20
3. Find out ANOVA from the following data of fruits per plants in cotton *G. Arboreum* L. 20

Variety		A	B	C	D	E	F	G
Replication	I	40	50	50	65	41	50	61
	II	45	50	52	61	41	54	65
	III	40	50	58	64	38	56	69

4. Write short notes on any four. 20
 - a) Substitution lines
 - b) Additive effects.
 - c) Acclimatization.
 - d) Fertilization barrier.
 - e) Correlation analysis.
 - f) Bulk method.
 - g) Heritability.

SECTION - II

5. a) Compare between D^2 statistic and metroglyph analysis. Add a note on cluster diagram. 20
b) Describe plaitns center's of origin concept.
6. What is QTL mapping? Explain how RFLP's help in crop improvements. 20
7. Describe types of response to selection with the help of rapid gain followed by slow response. 20
8. Write short notes on any four. 20
- a) Pure line concept.
b) Quarantine.
c) M.A.S.
d) Development of inbred.
e) Plant introduction.
f) Mass selection.
g) Diallel mating.

Seat Number

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BOT-2.3

Plant Physiology and Biochemistry (New)
(141203)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions, taking at least **two** questions from each section.
5. Use separate answer book for each section.
6. All questions carry equal marks.

SECTION - I

- | | | |
|----|---|----|
| 1. | What is photo synthesis? Explain the cyclic and non-cyclic photo phosphorylation. | 20 |
| 2. | What is oxidation-reduction? Explain the redox reactions in biological systems. | 20 |
| 3. | Define stress. Explain the water stress. | 20 |
| 4. | Write short notes on any four . | 20 |
| | a) pH and buffers. | |
| | b) Cytokinins. | |
| | c) Factors affecting on respiration. | |
| | d) Scope of plant physiology. | |
| | e) Enzymes in glycolysis. | |
| | f) Photosynthetic pigments. | |

SECTION - II

5. What are secondary metabolites? Explain in brief biosynthesis of terpenes. 20
6. Give an account of ETS in mitochondria. 20
7. Discuss the concept about translocation of organic solutes in higher plants. 20
8. Write short notes on **any four**. 20
- a) Lactic acid fermentation.
 - b) Microelements.
 - c) Biological clock.
 - d) Formation of starch.
 - e) Respiratory quotient.
 - f) G-protein coupled receptor.
