

Seat Number

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BOT - 3.1

**Gymnosperm and Paleobotany (New)
(141301)**

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. All questions carry equal marks.
5. Draw labelled diagrams wherever necessary.
6. Answer **any four** questions taking two questions from each section.
7. Answer to the two sections should be written in separate answer books.

SECTION - I

1. Give an account of sporogenesis, development of male and female gametophyte cycadales. **20**
2. Give a brief account of general characters, morphology, anatomy and affinities of Taxales. **20**
3. a) Discuss Gnetales is advanced order among Gymnosperms. **10**
b) Describe the characteristic features of Ginkgo and discuss its affinities. **10**
4. Write short notes on **any four**. **20**
 - a) Economic importance of Gymnosperms.
 - b) Pollination in coniferales.
 - c) Female cone of Ephedra.
 - d) Wood anatomical features of coniferales.
 - e) Classification of Gymnosperms by chamberlain.
 - f) Distribution of Gymnosperms in India.

SECTION - II

5. Explain geological time table with prevailing climate conditions and relevant major plant groups. 20
6. Describe the external and internal features of Lyginopteris, Horneophyton, Calamites, stauropteris. 20
7. a) Role of palaeobotany in oil exploration. 10
b) Scope & importance of paleobotany. 10
8. Write notes on any four. 20
- a) Botryoptes.
- b) External morphology of Lepidodendron (reconstruction).
- c) Sphenophyllum.
- d) Peel technique.
- e) Pentoxylon.
- f) Sahnipushpam.

Seat Number

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BOT - 3.1
Genetics and Plant Breeding
(Old) (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 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. | Write brief account on gene expression in eukaryotes. | 20 |
| 2. | What is induced polyploidy ? Describe evolution of wheat and cotton. | 20 |
| 3. | Define plant breeding. Describe scope, importance and objectives of plant breeding. | 20 |
| 4. | Write short notes any four . | 20 |
| | a) Histone proteins. | |
| | b) Linkage mapping. | |
| | c) Origin of species. | |
| | d) Recombination in bacteria. | |
| | e) Merits and demerits of Backcross method. | |
| | f) Apomixis. | |

SECTION - II

5. What is gene mutation ? Describe gene mutation in detail. 20
6. State brief account of genome organisation of TMV and Bacteriophage. 20
7. Describe the following. 20
- a) Mitochondrial genome.
 - b) Chloroplast genome.
8. Write short notes **any four**. 20
- a) Solenoid model.
 - b) Desire population for QTL mapping.
 - c) Factors affecting deviation from Hardy-Weinberg law.
 - d) Bacterial conjugation.
 - e) Hybrid seed production.
 - f) Sexual reproduction in plant.

Seat Number

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BOT - 2.1
Diversity of Lower Cryptogams
(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. With the help of suitable examples discuss the various types of life cycle pattern in phaeophyceae.
2. Describe the thallus organization in algae with neat diagram and examples.
3. Describe the cell structure of diatom and discuss on their mode of reproduction.
4. Write short notes on **any four**.
 - a) General characters of Red algae.
 - b) Nitrogen fixation and metabolism in BGA.
 - c) Scope of modern psychology.
 - d) The suffixes used for categorization of algae (According to ICBN).
 - e) General characters of chlorophyceae.
 - f) Asexual reproduction in green algae.

SECTION - II

5. Describe distinguishing characters, structure of thallus, reproductive bodies and life cycle pattern in Myxomycota.
6.
 - a) Economic importance of fungi.
 - b) Classification of fungi by Ainsworth et. al. 1973.
7. What are Lichens? Describe classification, types, anatomy and reproduction in Lichens.
8. Write short notes on **any four**.
 - a) Hyphal modification in Fungi.
 - b) Distinguishing characters of mastigomycotina.
 - c) Structure of asci.
 - d) Types of basidia.
 - e) Asexual reproduction in zygomycotina.
 - f) Types of conidia.

Seat Number

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काटी - 006



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 answer books.
6. Draw a neat labelled diagrams wherever necessary.
7. All questions carry equal marks.

SECTION - I

1. Describe post- Darwinian systems of classifications in Angiosperms. 20
2. Discuss the range of floral variations taxonomy and evolutionary trends of: 20
 - a) Scrophulariaceae.
 - b) Gramineae
3. Describe the role of reproductive biology in relation to taxonomy. 20
4. Write short notes on **any four**. 20
 - a) Retention of names.
 - b) Evolution of fruit.
 - c) New names
 - d) Primitive Stamen.
 - e) International code of botanical nomenclature (ICBN).
 - f) Nature of interior ovary.

SECTION - II

5. Describe salient features and points of biological importance of the families : 20
- a) Balanophoraceae
 - b) Lentibulariaceae.
6. Describe the recent systems in Angiosperms. 20
7. Describe the role of genetics and cytogenetics in relation to taxonomy. 20
8. Write short notes on **any four**. 20
- a) Aims and principles of taxonomy.
 - b) Author Citation.
 - c) Evolution of inflorescence.
 - d) Principles of the code I-V.
 - e) Phyllode theory.
 - f) Type method (typification).

Seat Number

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काटी - 008

BOT - 3.2

Plant Biotechnology and Bioinformatics (New)
(141302)

P. Pages : 1

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 section should be written in separate answer book.

SECTION - I

1. What is blotting technique? Describe different blotting techniques. **20**
2. Give detail account of commercial production of secondary metabolites. **20**
3. Write detail about procedure of isolation of protoplast from plant cell and application of protoplast culture. **20**
4. Write short note on **any four**. **20**
 - a) Callus culture.
 - b) Protanics
 - c) Somatic embryogenesis
 - d) Role of Transgenic plants in medicine.
 - e) Construction of restriction map.
 - f) Limitation of Bioinformatic.

SECTION - II

5. What is Genomics explain it w.r.t. Definition, structure, function and uses. **20**
6. Write detail about various web services use as Bioinformatic tool for multiple sequence alignment & multipurpose analysis. **20**
7. Give detail account of Direct gene transfer. **20**
8. Write short note on **any four**. **20**
 - a) Synthetic seed.
 - b) Plant tissue culture media.
 - c) Anther culture.
 - d) Scope of Biotechnology
 - e) Molecular markers
 - f) Advantages of transgenic plant.

Seat Number

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BOT - 3.2

**Environmental Botany and Biostatistics
(Old) (302)**

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.
7. Log table & calculators are allowed.
8. Neat diagrams, graphs must be drawn wherever necessary.

SECTION – I

- | | | |
|----|--|----|
| 1. | Define community. Give structure & analytical characters of community. | 20 |
| 2. | What is ecosystem ? Describe types & components of ecosystem. Add a note on productivity of Ecosystem. | 20 |
| 3. | a) What is EIA ? Explain the procedure of EIA. | 10 |
| | b) Comment on Ecotourism. | 10 |
| 4. | Write short notes on any four. | 20 |
| | a) Benefit & drawbacks of recycling. | |
| | b) Monsoon rainfall & irrigation. | |
| | c) Wildlife protection act 1972. | |
| | d) Solid waste management. | |
| | e) Scope of Environmental Botany. | |
| | f) Phenology & Phenogram. | |

SECTION – II

5. What is agriculture ecology ? Give the importance of agricultural operations & cropping pattern. 20
6. Explain Agroforestry & social forestry. Add a note on forest conservation. 20
7. Find mean, mode, median frequency table, mean deviation, standard deviation, coefficient of variance & range from following weight of brinjal. 20
48, 40, 45, 42, 43, 47, 55, 50, 52, 53, 55, 57, 46, 60, 55, 47, 44, 58, 54, 49.
8. Write short notes on any four. 20
- Sampling methods.
 - Kyoto protocol.
 - Homostasis.
 - Watershed management.
 - Merits & demerits of mode.
 - Ecotone & Edge effect.

Seat Number

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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. Use separate answer book for each section.
5. Answer **any four** questions, taking two questions from each section.
6. All questions carry equal marks.

SECTION - I

1. Describe genome sequencing with respect to Oryza Sativa L project. Add a note on synteny. 20
2. What is C-value paradox? Discuss the role of transposable elements in genome deviation. 20
3. Attempt any two. 20
 - a) Development of Carcinoma
 - b) Gene trapping and gene silencing.
 - c) RNA polymerase and gene regulation.
4. Write any four short notes among following. 20
 - a) RFLP markers
 - b) RNA Splicing
 - c) Split genes

- d) Proto - oncogenesis
- e) Human genome project.
- f) Genome annotation.

SECTION - II

5. Solve any two among the following. **20**
- a) Elimination of toxic substances from high yielding variety.
 - b) Describe procedure of mutation breeding.
 - c) Chilling stress at plant and cellular level.
6. What is ideotype? Explain the procedure of ideotype development in cotton. **20**
7. Describe different breeding methods applied to develop drought tolerant variety. **20**
8. Write any four short notes among the following. **20**
- a) Insect resistance
 - b) Quality Seed Production
 - c) Disease epidemics.
 - d) Evaluation
 - e) The Indian seed act 1996
 - f) CIMMYT

Seat Number

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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 question from each section.
5. All questions carry equal marks.
6. Draw labelled diagrams wherever necessary.
7. Answer to the two sections should be written in separate answer book.

SECTION - I

- | | | |
|----|---|----|
| 1. | Trace the evolution in gametophytes of Bryophyta. | 20 |
| 2. | "Anthocerotales occupy a unique position among Bryophyta" Discuss. | 20 |
| 3. | Outline the important features of Marchantiales and comment on the evolution of thallus in the order. | 20 |
| 4. | Write short notes on any four. | 20 |
| | a) Affinities of Takakiales. | |
| | b) Distribution of Bryophytes in India. | |
| | c) Characteristic features of sphaerocarpaceae. | |
| | d) Capsule of <u>Sphagnum</u> . | |
| | e) Amphigastria. | |
| | f) Economic importance of Bryophyta. | |

SECTION - II

5. Write an essay on Heterospory and origin of seed habit. 20
6. "Osmundales is regarded as a connecting link betⁿ Eusporangiate and Leptosporangiate ferns" Discuss. 20
7. a) Give an account of the important features of order Isoetales and discuss its affinities. 10
- b) Describe the distinguishing features of Psilotales. What is the structure of synangium. 10
8. Write short notes on any four. 20
- a) Gametophyte of Lycopodium.
- b) Sporocarp of Azolla.
- c) Strobilus of Selaginella.
- d) Distribution of pteridophytes in India.
- e) Spike of Ophioglossum.
- f) Characteristic features of Filicales

Seat Number

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BOT - 3.33

Genetics and Plant Breeding Special

Paper - I (New) (141305)

.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 of simple calculator is allowed.
5. Use separate answer book for each section.
6. All questions carry equal marks.
7. Answer **any four** questions taking **two** question from each section.

SECTION - I

1. How did the findings of Nilsson - Ehle shows that quantitative characters are inherited by Mendel's law. Discuss in detail. 20
2. Explain Randomised block design, describe it's role in plant breeding. 20
3. Explain use of polyploidy in breeding with a suitable example. 20
4. Write short notes on **any four**. 20
 - a) D^2 analysis
 - b) Metroglyph
 - c) Cytoplasmic male sterility
 - d) Aneuploidy
 - e) Multiple factor hypothesis
 - f) Pure line selection

SECTION - II

5. Explain how co-variance is calculated for two characters describe the procedure of ANCOVA with suitable example. 20
6. Attempt any two of the following. 20
- a) Explain measures of variation.
 - b) Inheritance of qualitative characters.
 - c) Merits and demerits of acclimatization.
7. Describe role of environment in quantitative inheritance with example. 20
8. Write short notes on any four. 20
- a) Mass selection.
 - b) Cluster analysis.
 - c) Quarantine.
 - d) M.A.S.
 - e) Correlation coefficient.
 - f) Distant hybridization.

Seat Number

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BOT - 3.34

Angiosperms Taxonomy Special Paper - I (New) (141306)

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. All questions carry equal marks.
5. Answer **any four** questions. **Any two** from each section.
6. Answer to the two sections, write in separate answer books.

SECTION - I

- | | | |
|----|---|----|
| 1. | Discuss plant group sympetalae of Engler's – a heptaphyletic in origin and their evolutionary trends. | 20 |
| 2. | Discuss range of floral variations, taxonomy, phylogeny and evolutionary trends in Engler's Helobiae. | 20 |
| 3. | Describe taxonomy, phylogeny and evolutionary trends in tubiflorae of Engler's. | 20 |
| 4. | Write short notes on any four. | 20 |
| | i) Major categories. | |
| | ii) Classification and aesthetics. | |
| | iii) Distinguishing characters of order-Rosales. | |
| | iv) Intraspecific categories. | |
| | v) Process of classification. | |
| | vi) Concepts of species. | |

SECTION – II

5. Discuss plant group Amentiferae – a heterogenous assemblage of moderately advanced dicotyledones and their evolutionary trends. 20
6. Describe range of floral variations, taxonomy phylogeny and evolutionary trends of Engler's order – Glumiflorae. 20
7. Describe **any two**. 20
- a) Distinguishing characters of order Liliflorae.
 - b) Range of floral variations in scitaminae.
 - c) General and special purpose of classification.
8. Write short notes on **any four**. 20
- i) Folk classification.
 - ii) Taxonomic categories.
 - iii) Distinguishing characters of contortae.
 - iv) Phases of classification.
 - v) Hierarchical classification.
 - vi) Floral variations in centrospermae.

Seat Number

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BOT - 3.34
Genetics and Plant Breeding Paper - I
(Old) (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. Answer **any four** questions taking two questions from each section.
5. All questions carry equal marks.
6. Simple type calculators are allowed.
7. Use separate answer books for each section.

SECTION – I

1. Enlist and describe chromosomal aberrations. Add a note on origin of aneuploids and their applications in crop breeding. 20

2. Find out ANOVA from the following data of fruits per plants in Capscium anum L.

RI	A(22)	B(23)	C(20)	D(21)	E(20)	F(28)	G(25)
RII	A(20)	B(28)	C(21)	D(22)	E(22)	F(24)	G(25)
RIII	A(21)	B(21)	C(25)	D(24)	E(26)	F(24)	G(25)

3. a) Describe multiple factor hypothesis.
 b) Hayman's graphical approach for diallel mating design.
4. Write short notes on **any four**.
- a) Substitution lines.
 - b) Lack response to selection.
 - c) Endo mitosis.

- d) Fertilization barrier.
- e) Correlation analysis.
- f) Additive effect.

SECTION – II

5. Describe different types of male sterility observed in plants. Add a note on application of genetic male sterility in crop improvement. **20**
6. What is QTL mapping ? Explain how RFLP mapping is exploited in crop improvement. **20**
7. a) Compare between D^2 statistic and metro glyph analysis. Add a note on cluster diagram. **10**
- b) Describe plants centers of origin concept. **10**
8. Write short notes on **any four**. **20**
- a) Back cross method.
 - b) Quarantine.
 - c) Inbred lines.
 - d) Components of genetic variance.
 - e) Pure line concept.
 - f) Diallel cross.

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. How biotechnology is helpful for crop improvement explain in detail with suitable example ? 20
2. How marker assisted selection is applied in plant breeding explain ? 20
3. Solve **any two** of the following. 10
 - a) Applications of plant tissue culture in agriculture.
 - b) A. tube faciens mediated gene - transfer.
 - c) Herbicide resistance.
4. Write short notes on **any four**.
 - a) Cryo - preservation
 - b) Somatic embryogenesis.
 - c) Bt- Cotton.
 - d) Embryo culture.
 - e) Gene - pyramiding.
 - f) Plant - database.

SECTION - II

5. Describe food safety assessment approval procedure for G.M. foods in India. 20
6. Explain TRIPS and various provisions in TRIPS agreement. 20
7. Solve **any two** of the following.
- a) Negative impact of G.M. Crops. 10
- b) Protection of plant varieties and farmers right. 10
- c) Proteome analysis.
8. Write short notes on **any four**.
- a) Carbon credits.
- b) HPLC.
- c) Protein arrays.
- d) Bio-ethanol crops.
- e) Research collaboration agreement.
- f) SNP detection.

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. | Give an account of ETS in mitochondria. | 20 |
| 2. | Define stress? Explain in brief water stress. | 20 |
| 3. | Discuss the concept about translocation of organic solutes in higher plants. | 20 |
| 4. | Write short notes on any four . | 20 |
| | a) Respiratory Quotient (RQ) | |
| | b) Hill reaction. | |
| | c) Physiological effect of Auxins. | |
| | d) Circadian rhythms. | |
| | e) pH and buffers. | |
| | f) Factors affecting on photosynthesis. | |

SECTION – II

5. Explain the redox reactions in biological systems. 20
6. What are secondary metabolites? Explain in brief biosynthesis of terpenes. 20
7. Explain the dark reaction of photosynthesis. 20
8. Write short notes on any four. 20
- a) Cytokinins.
 - b) Lactic acid fermentation.
 - c) G-protein coupled receptors.
 - d) Formation of starch.
 - e) Biological clock.
 - f) Scope of plant physiology.

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 section should be written in separate answer book.
6. All questions carry equal marks.

SECTION - I

- | | | |
|----|--|----|
| 1. | Describe detail structure of chromatin and chromosome. | 20 |
| 2. | Elaborate the molecular mechanism of mutation. | 20 |
| 3. | Explain transcription regulation in prokaryotes, with suitable examples. | 20 |
| 4. | Write short notes on any four . | 20 |
| | a) Importance of plant breeding. | |
| | b) Hybrid vigour. | |
| | c) Prokaryotic RNA polymerase. | |
| | d) Program cell death. | |
| | e) Cytoplasmic inheritance. | |
| | f) Gene battery. | |

SECTION – II

5. What is cot curve? How cot $\frac{1}{2}$ play significant role in molecular biology. 20
6. Define cell cycle. Explain role of cyclin and cyclin dependent kinase in regulation of cell cycle. 20
7. a) Banding pattern in chromosome. 10
b) Variation in chromosome structure. 10
8. Write short notes on **any four**. 20
- a) Role of Rec-A in recombination.
- b) Sexual reproduction in crop plant.
- c) Merits of pure line selection method.
- d) Enzymes involved in replication of DNA.
- e) Excise repair.
- f) Transposons.

Seat Number

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BOT - 1.1
Angiosperm Taxonomy
(141111)

P. Pages : 2

Time : Three Hours

Max. Marks : 60

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. All questions carry equal marks.
5. Answer any four questions. Any two from each section.
6. Answer to the two sections write in separate answer books.

SECTION - I

1. Discuss systems of classifications in Pre-Darwinian period. 15
2. Describe following families with ref. to salient features and points of biological importance 15
 - a) Droseraceae
 - b) Orchidaceae.

OR

- Describe with suitable examples role of embryological data in taxonomy. 15
3. Write short notes on any three. 15
 - i) Primitive carpel.
 - ii) Phyllode theory.
 - iii) Author citations.
 - iv) Retention of names.
 - v) Nature of inferior ovary.

SECTION – II

4. Describe micromorphology and ultrastructure in relation to taxonomy. 15
5. Describe following families with respect to taxonomy, phylogeny and evolutionary trends 15
- a) Ranunculaceae
- b) Gramineae
- OR
- Discuss the role of phytochemistry in relation to taxonomy with suitable evidences. 15
6. Write short notes on any three. 15
- i) Paleobotany in relation to taxonomy.
- ii) Evolution of inflorescence.
- iii) Primitive stamen.
- iv) Principles of the code I – V.
- v) Conservation of names.

Seat Number

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BOT - 1.2

**Environmental Botany and Biostatistics
(141112)**

P. Pages : 2

Time : Three Hours

Max. Marks : 60

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. Log table and calculator are allowed.

SECTION - I

1. Explain the food chain and food web. 15
2. Define solid waste. Explain the solid waste management. 15

OR

What is GIS? Describe the components of GIS.

3. Write short notes on any three. 15
 - a) Agroforestry.
 - b) Biotic environment.
 - c) EMR
 - d) Kyoto protocol
 - e) Wet land management.

SECTION - II

4. Calculate the mode, median, mean, Range, mean deviation and standard deviation for the following data wt. of 10 ground nut pods. 15
3.1 4.0 4.5 3.5 4.0 4.6 3.5 3.8 3.5 4.5
5. What is EIA? Explain the environmental auditing. 15

OR

What is mean by environmental legislation? Explain wild life protection Act 1972

6. Write short notes on any three. 15
- a) Green house effect.
 - b) Merits and demerits of mean.
 - c) Correlation
 - d) Concept of significance.
 - e) Ozon layer depletion

Seat Number

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BOT - 1.3

Cytogenetics, Plant Breeding and Molecular Biology
(141113)

P. Pages : 2

Time : Three Hours

Max. Marks : 60

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. Answer to the two section should be written in separate answer book.
6. All questions carry equal marks.
7. Draw neat labelled diagrams wherever necessary.

SECTION – I

1. Describe with examples the cytoplasmic inheritance controlled by organelles like plastids and Mitochondria in plants. **15**
2. Discuss detail account on gene regulation in prokaryotes. **15**

OR

Give an account of pure line selection method of plant breeding including method. Merits and demerits of it.

3. Write short notes on following **any three**. **15**
 - a) Factors affecting crossing over.
 - b) Cell cycle.
 - c) Importance of hybrid seed production.
 - d) Spontaneous mutation.
 - e) Polyadenylation.

SECTION – II

4. Discuss the process of translation in living organism. 15
5. Give an account of molecular organisation of chromosome. Describe nucleosome concept in detail. 15

OR

Describe various reproductive systems found in crop plants.

6. Write short notes on following any three. 15
- Transposons.
 - Apoptosis.
 - Overdominance hypothesis.
 - C-value paradox.
 - RNA polymerase.
