2025

BOTANY — HONOURS

Paper : DSCC-2

(Plant Systematics)

Full Marks : 75

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer ***any six*** of the following questions :

   (a) Write the full form of I.A.P.T and O.T.U. 1+1

   (b) What is Tautonym? Cite an example. 1+1

   (c) Define flora. Cite an example. 1+1

   (d) Name the type genus of the family Orchidaceae and Labiatae. 1+1

   (e) State the nature of stipules in Malvaceae and Rubiaceae. 1+1

   (f) What is Omega taxonomy? 2

   (g) Define homonym. Cite an example. 2

   (h) What is Pollinia? 2

   (i) What is double citation? Give example. 2

2. Answer briefly ***any three*** of the following questions :

   (a) Mention the role of botanic garden in research and conservation of plants. 5

   (b) Write a short note on the economic importance of Palmae. 5

   (c) Write the role of phytochemistry in Taxonomy. 5

   (d) Define nomenclatural type. What is the limitation of type concept? 4+1

   (e) Comment on advanced characters of the family Compositae. 5

3. Answer ***any four*** of the following questions :

   (a) Describe the classification system proposed by Takhtajan in 1997. Mention the merits and demerits of the system. 6+3+3

   (b) Compare the inflorescence and floral characters between the families Labiatae and Acanthaceae. Mention their economic importance. 6+3+3

(c) Mention the name of the family where the following structures are found. Mention one medicinal plant of each family and their uses. 3×4

(i) Cremocarp

(ii) Regma Fruit

(iii) Aquatic family with Apocarpous ovary

(iv) Interpetiolar stipule.

(d) What is effective publication? State any five conditions for valid publication of a name of a taxon. Define rules of priority with suitable examples. What is Paratype? 2+5+3+2

(e) Distinguish between : 3×4

(i) Gynostegium and Gynostemium

(ii) Monophyly and Polyphyly

(iii) Homonym and Synonym

(iv) Indented key and Bracketed key.

(f) Point out the basis and principles of artificial, natural and phylogenetic system of classification. What is APG IV classification? 9+3

2025

BOTANY — HONOURS

Paper : SEC-2

(Biofertilizers and Biopesticides)

Full Marks : 75

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Candidates are required to give their answers in their own words as far as practicable.

1. Answer ***any six*** questions in brief : 2×6

   (a) What is Farm Yard Manure?

   (b) Mention two colony characters of Azotobacter.

   (c) Name two nematodes used as bioinsecticides.

   (d) What is guano?

   (e) What is compost tea?

   (f) What is algalization?

   (g) What is hartig net?

   (h) Name one filamentous non-heterocystous and one unicellular nitrogen fixing Cyanobacteria.

   (i) What is bacterization?

2. Write short notes on (***any three***) :

   (a) Recycling of industrial waste to compost 5

   (b) Role of PGPR as biofertilizer 5

   (c) Role of Cyanobacteria in Rice Cultivation 5

   (d) Isolation of Phosphate solubilizing microorganisms (PSM) 5

   (e) How are N-biofertilizers added to the field? What is seed pelleting? 3+2

3. Answer ***any four*** questions :

   (a) What do you mean by organic farming? Describe briefly the type of organic biofertilizer. Mention two disadvantages of organic biofertilizer. 2+8+2

   (b) Why *Pseudomonas* is considered both as biofertilizer and biocontrol agent? State the infection cycle of *Beauveria bassiana* with the help of a diagram. Comment on the field application of Baculovirus. 5+4+3

(c) What is Actinorhizal symbiosis? Give an example of Actinorhizal Organism which fixes Nitrogen (atmospheric). Briefly describe with diagram the infection process and nodule formation in Actinorhizal symbiosis. Name two Actinorhizal plants. 2+8+2

(d) State the isolation and mass cultivation of *Rhizobium* sp. from root nodule. Write down the characteristic features of the genus. 5+5+2

(e) What is biopesticides? Give example. Give a flowchart for the isolation of *Trichoderma* (I). Briefly describe the field application of this fungi. How does it act as an antagonistic biocontrol agent? 1+1+3+3+4

(f) What is green manure? Give two examples of Leguminous and Non-leguminous green manure. What are the advantages and disadvantages of green manure? 2+2+(4+4)
