

2016  
BOTANY — HONOURS  
Third Paper  
Full Marks – 100

The figures in the margin indicate full marks

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

Module – V

(Marks – 50)

1. Answer the following questions :

- (a) Mention two land adaptive features of *Rhynia*. 2
- (b) Define gradate sorus with example. 2
- (c) Name one pteridophyte used as pesticide. 1
- (d) What is meant by cleavage polyembryony? Cite one example. 2
- (e) What is lagenostome? Where does it occur? 2
- (f) What is corallorhiza? 1

2. (a) Describe the anatomical features at the nodal region of *Equisetum* stem with suitable diagrams. 5

Or

Describe the gametophyte of *Psilotum* with relevant illustrations. 5

(b) State the evolutionary significance of *Archaeopteris*. 5

Or

Write a note on the structural variations of megasporophyll found in different extant species of *Cycas* with diagrams. 5

3. (a) Mention the biological advantages of seed habit. Give an account of the possible stages in the evolution of seed habit from homosporous condition with suitable diagrams. Discuss how far *Selaginella* has reached the level of seed habit. 2+9+4

Or

Name the different organ genera of the reconstructed plant *Calamites* and mention their geological age and geographical occurrence. Describe the stem anatomy and fructification of *Calamites* with suitable diagrams. 3+2+4+6

[Turn Over]

(b) Mention the different organ genera of the reconstructed plant *Williamsonia seawardiana* Sahnii. Describe its male and female fructifications with suitable diagrams. State its geological age and geographical distribution. 3+5+5+2

Or

Compare male and female gametophytes of *Cycas* and *Gnetum* with diagrams. Mention the angiospermic characters of *Gnetum* and fern characters of *Cycas*. 5+5+3+2

### Module – VI

(Marks – 50)

4. Answer the following questions briefly :
- (a) Distinguish between habitat and ecological niche. 2
  - (b) Define metallophyte. Give an example. 2
  - (c) What is meant by climax community? 1
  - (d) Distinguish between intussusception and apposition. 2
  - (e) Define quiescent centre. 2
  - (f) Give the diagram of a solenostele. 1
5. (a) Discuss the role of cryopreservation in the conservation of plant biodiversity. 5

Or

- Discuss the role of plant indicators in environment monitoring. 5
- (b) Discuss the ontogeny of sieve tube with suitable diagrams. 5

Or

State the adaptive anatomical features of hydrophytes. 5

6. (a) Define biodiversity. Discuss the different levels of biodiversity. Mention the criteria of a biodiversity hot spot. Name two biodiversity hot spots in India. 2+7+4+2

Or

Describe the floristic composition of lower Gangetic plain with particular reference to deltaic Sunderbans. Give an account of endemic elements in Indian flora. 10+5

- (b) Explain the principles governing the distribution of mechanical tissues in different plant organs. Draw and describe the anomalous secondary growth in *Tecoma*. 9+6

Or

- (i) State the Tunica-Corpus theory of shoot apical organization with illustrations. 5
- (ii) Briefly discuss the chemical constituents of cell wall. 5
- (iii) Draw and describe the different types of stomata found in dicotyledonous plants. 5

2019

## BOTANY — HONOURS

Third Paper

Full Marks : 100

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Module – V

(Marks : 50)

1. Answer the following questions :

- (a) Which plant is known as 'scouring rush'? Why is it so called? 2
- (b) What is leptosporangiate mode of sporangial development? Give an example. 2
- (c) Name a pteridophyte used in agriculture. 1
- (d) What do you mean by cleavage polyembryony? 2
- (e) What are 'Bars of Sanio'? 2
- (f) For which organ the name *Cordaites* was originally given? 1

2. (a) Describe the stem anatomy of *Lepidodendron*. What is apoxogenesis? 4+1*Or,*Give an account of the external and internal morphological features of sori in *Dryopteris*. 5(b) Draw and describe the internal morphology of *Pinus* needle. 5*Or,*Write a brief note on the morphological diversity found in different species of *Cycas*. 53. (a) Name the different organ-genera of *Calamites*. Describe the stem anatomy and strobilar organization of it with suitable diagrams. How can you distinguish the stem anatomy and strobilar organization between extinct *Calamites* and extant *Equisetum*? 3+4+5+3*Or,*

Define 'telome'. Characterise the different elementary processes associated with the Telome theory proposed by Zimmermann. Explain the origin of fertile structures in Lycophyta, Sphenophyta and Filicophyta with suitable diagrams. 1+3+4+3+4

(b) Draw and describe the structure of female fructifications of *Lyginopteris* and *Williamsonia*. Mention their geological age and geographical distribution. 6+6+3

Please Turn Over



2019

## BOTANY — HONOURS

Fourth Paper

Group – A

Full Marks : 50

*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 the following questions :

- |  |   |
|--|---|
| (a) Define nomenclatural type.                       | 2 |
| (b) Define plesiomorphy and apomorphy.               | 2 |
| (c) What is the alternate name of Palmae?            | 1 |
| (d) Write the acronym of Central National Herbarium. | 1 |
| (e) Define Neotype.                                  | 2 |
| (f) Distinguish between monophyly and polyphyly.     | 2 |

2. Answer *any two* of the following questions :

- |  |       |
|--|-------|
| (a) Describe briefly, the different types of aestivations with one example to each.                      | 5     |
| (b) Define superficial and basal placentations with diagrams and one example to each.                    | 2½+2½ |
| (c) Describe drupe and hesperidium types of fruits with one example to each.                             | 2½+2½ |
| (d) Describe five different types of gamopetalous regular corolla with diagrams and one example to each. | 5     |

3. What is meant by phylogenetic system of classification? How does it differ from natural system of classification? Describe the broad outline of Cronquist's system of classification (1988) up to subclasses. State its two merits and two demerits. Name the book in which this system was published.

2+2+6+2+2+1

*Or,*

- |  |         |
|--|---------|
| (a) Write briefly the role of Botanical Garden in teaching and botanical research. |         |
| (b) Write two provisions of Valid Publications.                                    |         |
| (c) State any two principles of ICBN (ICN).  | 6+3+3+3 |
| (d) What is author citation? Explain with one example.                             |         |

Please Turn Over

4. Write briefly the importance of betalains in plant taxonomy. Write a brief note on the role of anatomy in plant systematic study with three suitable examples. Differentiate between the subfamilies of Leguminosae based on corolla and androecium morphology. 4+6+5

*Or,*

- (a) State the salient features of Poaceae. Give one example of a plant of this family having economic importance.
- (b) Write a brief note on the economic importance of the family Euphorbiaceae.
- (c) Why is Orchidaceae considered as an advanced family among monocots? (4+1)+5+5
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