

CITY COLLEGE EXAMINATION CENTRE

B.Sc. (Hons.) Part – II Examination, 2020

[According to Calcutta University Botany Hons. (1+1+1) syllabus]

Subject: BOTANY

Paper – III [Pteridophyte, Gymnosperms, Ecology and Plant Geography, Anatomy]

Full Marks: 50

Time: 4 hours

Please submit your answer script as a *single pdf file* to the following e-mail ID:

botanycity.p2hons@gmail.com

1. Answer **any one** of the following questions 1 x 10 = 10

- a) Discuss in brief the adaptive evolutionary modifications of early vascular land plants. (10)
- b) Describe with diagram the internal anatomical features of stem of *Lepidodendron*. (10)
- c) Draw and describe the structure of female gametophyte of *Cycas* sp. (10)
- d) Describe the stem anatomy of *Pinus* sp. with diagram. (10)
- e) Draw and describe the structure of male fructification of *Pinus* sp. (10)
- f) What is endemism? Write a note on endemic flora of India. (2+8)
- g) What is phyto-remediation? Write a note on different types of phyto-remediation. (2+8)
- h) Define plastochrone. Write down the Tunica-Corpus theory of shoot apex organization. (2+8)
- i) Mention three adaptive anatomical features of Xerophytes and Hydrophytes. (5+5)

2. Answer **any two** of the following questions 2 x 20 = 40

- a) Define Telome. What are the different “evolutionary processes” of Telome theory? Discuss with suitable diagrams the evolution of synangium in *Psilotum*, sporophyll in *Selaginella* and sporangiophore in *Equisetum*. (2+3+5+5+5)
- b) Differentiate between homosporous and heterosporous. What is incipient heterosporous? Mention the evolutionary events that took place in ovule evolution after the onset of heterosporous. Add a note on biological advantage of seed habit. (2+3+10+5)
- c) Name the different organ genera of reconstructed plant *Lyginopteris*. Describe stem anatomy and pollen bearing organs with suitable diagrams. Mention its geological age and geographical distribution. (3+7+7+3)
- d) (i) Write down the angiospermic characters of *Gnetum* and fern characters of *Cycas*. (6+4)
(ii) Discuss the economic importance of Gymnosperms with reference to food and medicine. (5+5)
- e) What is plant succession? Distinguish between primary and secondary succession. Discuss in brief, with suitable diagrams and examples, the different seral stages with reference to Hydrosere. (2+3+15)
- f) What is phytogeography? Mention the different phytogeographical zones found in India. Write notes on flora of Lower Gangetic Plains with particular reference to Sundarban. (2+4+14)

- g)** Define Biodiversity. What is Biodiversity hot-spot? Discuss in brief the different methods of conservation of Biodiversity. (2+3+15)
- h)** Briefly describe the chemical constituents and ultra-structure of cell wall. (10+10)
- i)** Differentiate between protoxylem and metaxylem. Briefly describe with suitable diagrams the anomalous secondary growth observed in stem of *Dracaena* and root of *Tinospora*. (4+8+8)