

2021
BOTANY
[HONOURS]
Paper : IV

Full Marks : 75

Time : 4 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***Answer all the questions.****(Pteridophytes)****[Marks : 25]**

1. Answer any **three** of the following: $1 \times 3 = 3$
 - a) At which geological age did the *calamites* disappear?
 - b) Name one pteridophyta where amphiphloic siphonostele is found.
 - c) Name a fossil genus where you find ligule.
 - d) Name a pendulous epiphytic species of *Psilotum*.
 - e) What is the generic name of Adder's tongue?
2. Answer any **three** of the following: $2 \times 3 = 6$
 - a) Point out two dissimilar features found in between the members of Rhynopsida and Zosterophyllopsida.

- b) Mention two important anatomical features in T.S. of stem to distinguish *Calamites* and *Equisetum*.
 - c) What is heterospory? Name one living heterosporous lycopod.
 - d) Mention two characteristic features of *Psilotum* gametophyte.
 - e) What is the morphological nature of the elaters of a spore of *Equisetum*?
3. Answer any **one** of the following: $6 \times 1 = 6$
 - a) Briefly discuss three types of gametophyte development in *Lycopodium* with suitable diagram. 2×3
 - b) Define a microphyllous leaf. Trace its evolution as per 'Enction Theory' of Bower. $1 + 5$
 4. Answer any **one** of the following: $10 \times 1 = 10$
 - a) Discuss the morphological and anatomical characters of *Lepidodendron* with diagrams. Mention the causes of extinction of giant Lycopods. $4 + 4 + 2$
 - b) Describe with sketches the structure of sporocarp of *Marselia*. Comment on the morphological nature of it. $6 + 4$

(Progymnosperms and Gymnosperms)

[Marks : 25]

5. Answer any **three** of the following: $1 \times 3 = 3$
- a) Name two gymnospermous genera where ciliated male gametes are found.
 - b) Name a gymnospermic plant where archegonia are absent.
 - c) Write the botanical name of "Maiden hair tree".
 - d) Who discovered the group "progymnospermopsida"?
 - e) Name one anticancerous drug yielding plant.
6. Answer any **three** of the following: $2 \times 3 = 6$
- a) What is 'tent pole'?
 - b) What is girdling leaf trace? Name a plant where it occurs.
 - c) How does the nutritive tissue of Gymnospermous embryo differs from that of angiospermous one?
 - d) Cite two angiospermic and two gymnospermic features of *Gnetum*.
 - e) What is coralloid root?
7. Answer any **one** of the following: $6 \times 1 = 6$
- a) Give an illustrated account of the anatomy of the *Ephedra* stem and mention its xerophytic characters. $4+2$

4(SC)

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[Turn over]

- b) Discuss the role of gymnosperm as a source of wood, resin and used as food. 3×2

8. Answer any **one** of the following: $10 \times 1 = 10$
- a) Describe the characteristic features of the reconstructed plant *Archaeopteris* and comment on its affinity with gymnosperms. $8+2$
 - b) Name the different organ genera of the reconstructed plant *Lyginopteris*. Describe its male and female fructification. Mention its geological age. $2+7+1$

(Palaeobotany and Palynology)

[Marks : 25]

9. Answer any **three** of the following: $1 \times 3 = 3$
- a) Name two Radiometric dating methods used for the age determination of fossil.
 - b) What do you mean by 'unifloral honey'?
 - c) Distinguish between a pteridophytic spore and phanerogamic pollen grain.
 - d) What is sporopollenin?
 - e) Name the type of preservation best suitable for palaeobotanic studies.
10. Answer any **three** of the following: $2 \times 3 = 6$
- a) Name two characteristic genera of plant megafossils of Triassic Gondwana.
 - b) Define Index fossil. Give example.

4(SC)

[4]

- c) What would be the shape of a radial symmetrical pollen grain with equatorial diameter $250\ \mu\text{m}$ and polar diameter $75\ \mu\text{m}$?
- d) What is meant by the 'Half-Life' of a radio element?
- e) Name the type of fossil which gives three dimensional idea of plant organ. Give example.

11. Answer any **one** of the following: $6 \times 1 = 6$

- a) Distinguish between Petrification and Compression type of fossil. What is Pseudofossil? $2+2+2$
- b) Describe different type of compound apertures with diagram. 6

12. Answer any **one** of the following: $10 \times 1 = 10$

- a) What is meant by the 'Gondwana sequence' in India? What are the basis of three fold classifications? Give a brief account of the megaflora succession through the "Middle Gondwana". $1+2+7$
- b) Schematically represent the standard Geologic Time Scale. Mention the major event of plant life through the Earth's History. $6+4$
