

2021
BOTANY
[HONOURS]
Paper : IX

Full Marks : 80

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.****(Anatomy)****[Marks : 20]**

1. Answer any **two** questions: 1×2=2
- i) What is "storied cork"?
- ii) Define stomatal pit.
- iii) Define "quiescent centre".
- iv) What is dictyostele?
2. Answer any **one** question: 2×1=2
- i) Mention two anatomical features of epiphytes helping their adaptation.
- ii) Define and characterize "stem cell niches".

3. Answer any **one** question: 6×1=6
- i) Characterize meristem. Diagrammatically represent the organisation of Shoot Apical Meristem (SAM). How does SAM differ from Root Apical Meristem (RAM)? 2+2+2=6
- ii) Diagrammatically represent and comment on anomalous secondary growth of *Bignonia stem*. 3+3=6
4. Answer any **one** question: 10×1=10
- i) Diagrammatically represent and describe different types of stomata. Comment on ontogeny of stomata. 3+4+3=10
- ii) Write short notes on :
- a) Anatomical adaptations of halophytes.
- b) Evolution of stele.
- c) Biocollateral vascular bundle.

3+4+3=10**(Plant Breeding and Biometry)****[Marks : 20]**

5. Answer any **two** questions: 1×2=2
- i) What is meant by "arithmetic mean"?
- ii) What is pedigree selection?
- iii) Define "anthesis".
- iv) What is meant by "Sample Size"?

[Turn over]

6. Answer any **one** question: $2 \times 1 = 2$

- i) Differentiate between quantitative and qualitative variables.
- ii) Differentiate between standard deviation and standard error.

7. Answer any **one** question: $6 \times 1 = 6$

- i) Briefly discuss about different types of frequency distribution.
- ii) Comment on significance of male sterility.

8. Answer any **one** question: $10 \times 1 = 10$

- i) Define backcross. How does gene frequency measured applying Hardy-Weinberg hypothesis? Mention two merits of Purline selection. $2+6+2=10$

- ii) What is self incompatibility (SI)? What are the levels of self incompatibility? Shortly discuss about genetic basis of self incompatibility. What are the significances of self incompatibility in plant breeding?

$2+2+4+2=10$

(Natural Resources and their Utilization)

[Marks : 15]

9. Answer any **one** question: $1 \times 1 = 1$

- i) What is meant by chemical drug evaluation?
- ii) Write the binomial names of two rubber yielding plants.

10. Answer any **one** question: $2 \times 1 = 2$

- i) Write an economic use of clover. Name one glycoside producing plant.
- ii) What is the basic difference between pharmacognosy and pharmacology?

11. Answer **all** questions: $6 \times 2 = 12$

- i) Briefly describe rice cultivation methods in West Bengal. 6
- ii) Describe organoleptic and biological method of drug evaluation. $3+3=6$

(Ecology and Environmental Botany)

[Marks : 25]

12. Answer any **three** questions: $1 \times 3 = 3$
- Define ecocline.
 - Name the functional plant group in which "inverted" pyramid is found.
 - What is meant by "Schizoendemics"?
 - Write the full form of SSC – the Organization related to conservation.
 - Define soil oligotrophy.
13. Answer any **three** questions: $2 \times 3 = 6$
- Name the "Hotspots" of Indian sub-continent.
 - Mention the selection criteria of "Hottest Hotspot".
 - Name two "true mangrove species" from Sunderban vegetation.
 - Differentiate between range of tolerance and ecological amplitude.
 - Differentiate between "bio-coenosis" and "bio-geocoenosis".

14. Answer any **one** question: $6 \times 1 = 6$
- Characterize community. Write the relationship between population density and initial population size. $3 + 3 = 6$
 - Write a short account on vegetation of Eastern and Western Himalayas. $3 + 3 = 6$
15. Answer any **one** question: $10 \times 1 = 10$
- Write short notes on the following : $2 \frac{1}{2} \times 4 = 10$
 - Adaptive significance of photosynthesis.
 - IUCN categories of threatened plants.
 - Measurements of species diversity.
 - Metal indicating plants.
 - What is meant by 'Ecological succession'? Why succession is known as unidirectional process? Mention different theories of plant succession. Define "disc-climax". $2 + 2 + 4 + 2 = 10$