

2018

BOTANY

(Major)

Paper : 4-1

(Morphology, Palynology and Embryology
of Angiosperms)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following : 1×7=7

- (a) Name the characteristic inflorescence found in Lamiaceae.
- (b) Give an example of tree where phyllode is found.
- (c) Name the gymnospermic taxon which forms a bridge in between gymnosperms and angiosperms.

- (d) Name the characteristic pollen sac found in Orchidaceae.
- (e) What is egg apparatus?
- (f) What is fertile telome?
- (g) What is cap block?

2. Answer the following : 2×4=8

- (a) What is sporopollenin? Mention its function.
- (b) Give a diagrammatic sketch of an inferior ovary with proper labelling.
- (c) Draw a polygonum type of embryo sac with proper labelling.
- (d) What is apomixis?

3. Write short notes on any *three* of the following : 5×3=15

- (a) Origin of head from dichasium
- (b) Primitive stamen
- (c) Biological importance of pollen kit
- (d) Double fertilization and its significance
- (e) Structure of a typical megasporangium

4. Answer the following : 10×3=30

- (a) What is phyllode theory? Describe the different aspects of this theory. 2+8=10

Or

Describe with neat diagram the different types of cohesion and adhesion of stamens. 5+5=10

- (b) Describe in detail with proper diagram about the development of female gametophyte. 10

Or

What is germ pores? Describe with neat diagram the different steps involved in the formation of male gametes. 1+9=10

- (c) How does endosperm form? Describe different types of endosperms. What is ruminant endosperm? 2+6+2=10

Or

Describe the development of a typical monocotyledonous embryo with suitable diagram. 10

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Paper : 4:2

(**Plant Taxonomy**)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following : 1×7=7

(a) Who is called the father of Indian taxonomy?

(b) Which year is treated as starting point of botanical nomenclature?

(c) Why was the term Draft BioCode introduced in biology?

(d) Who proposed the hypothesis 'neotenic origin'?

(e) What is meant by Gamma taxonomy?

(f) Why have DNA technologies created new opportunities for taxonomic studies?

(g) Define tetradynamous stamen.

2. Answer the following : 2×4=8

- (a) Differentiate between monophyletic and polyphyletic.
- (b) Write a note on spikelet.
- (c) Distinguish between holotype and lectotype.
- (d) Describe the difference between morphological species concept and biological species concept.

3. Answer the following (any three) : 5×3=15

- (a) The family Orchidaceae displays special morphological features and adaptations for cross-pollination. Justify.
- (b) Describe briefly about neo-Adansonian principles.
- (c) Write a note on the importance of wood anatomy in plant classification.
- (d) Write a brief note on specific epithet.
- (e) Describe the economic importance of Zingiberaceae.

4. Answer the following (any three) : 10×3=30

- (a) What is phylogenetic classification? Give a detailed outline of Takhtajan system of classification, 1980. Do you think that this system is entirely based on the principles of phylogeny? Explain briefly. 2+7+1=10

- (b) What is the basic cladistic concept behind APG system? Give a brief description of APG system II (2003). Write merits and demerits. $1+6+3=10$
- (c) Why is the family Asteraceae regarded as highly advanced family among the dicotyledons? Mention its systematic position. $8+2=10$
- (d) Write explanatory notes on the following : $5+5=10$
- (i) History of International Code of Botanical Nomenclature (ICBN)
- (ii) Salient features of Lamiaceae
- (e) Why Bentham and Hooker placed Magnoliaceae under the cohort Ranales at the beginning of their classification? Discuss the affinities and economic importance of Magnoliaceae. $4+3+3=10$
- (f) Write an explanatory note on literatures in plant taxonomy. Define cluster analysis, OTUs and dendrogram. $4+2+2+2=10$
