

M.Sc. (Botany) Semester—IV

PLANT ANATOMY

Paper—BOTC-621

Time Allowed—3 Hours] [Maximum Marks—50

Note :— Attempt *all* the parts of question number 1 (Section A), *seven* parts of question 2 (Section-B) and *three* parts of question 3 (Section-C). Support your answer with suitable diagrams. Be brief and to the point in your answers.

SECTION—A

1. Give short answers not exceeding *four* lines to each of the following parts. Each part carry 1 mark.
 - (i) Differentiate between Amphivasal and Amphicribal vascular bundles.
 - (ii) Define dendrochronology.
 - (iii) Explain how knots are formed in the wood.
 - (iv) Comment upon the post-infection histological changes in plants in response to pathogen attack.

- (v) Write two major differences in the internal anatomy of dicot and monocot seed coat.
- (vi) Define Plastochrone.
- (vii) Write two major differences between Duramen and Albumen.
- (viii) Comment upon the prominent changes that occur during root-stem transition.

SECTION—B

2. Give answer to any *seven* questions of your choice out of the following. Each such question carries 3 marks. Your answer to such attempted question should not exceed *two* pages.
 - (i) Give an account of origin, structure and activity of Cambium.
 - (ii) Discuss the distribution and role of sclerenchyma in leaves and roots of plants.
 - (iii) Write an explanatory note on the type of nodes in dicot and monocot stems.
 - (iv) What do you understand by growth rings ? How these are formed ? Discuss the anatomical peculiarities of different type of wood formed during this activity.

- (v) Discuss the techniques and methods in wood technology along with keys for the identification of common Indian woods.
- (vi) Give an account of common anatomical features of Xerophytic plants and their functional importance.
- (vii) Discuss the distribution, structure and function of Laticifers.
- (viii) Discuss the structure and functions of endodermis and pericycle.
- (ix) Discuss the anatomical features of submerged and free-floating hydrophytes.
- (x) Discuss the ultra structural surface features of fruits and their importance in plant taxonomy.

SECTION—C

3. Attempt **three** parts, each of 7 marks. Answer to any of the part should not exceed **four** pages.

- (i) Define anomalous secondary growth. Explain it giving suitable example of deviation from normal secondary growth due to :
 - (a) Abnormal functioning of the cambium
 - (b) Formation of inter-xylary phloem.

- (ii) Give an illustrated account of node-internode transition and formation of leaf and branch traces from the nodal region.
- (iii) Write explanatory notes on the following :
 - (a) Polycyclic vasculature
 - (b) Anatomy and chemistry of lignification.
- (iv) Give an illustrated account of modification in anatomical features of roots in epiphytic plants, coralloid roots and mycorrhizal roots.
- (v) Give a comparative account of anatomical features of dicot and monocot seeds and their taxonomic importance.

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