

[This question paper contains 4 printed pages.]

1304

Your Roll No. ....

B.Sc. (Hons.)/III

A

BOTANY – Paper IX

(Developmental and Functional Plant Anatomy)

(Admissions of 2004 & onwards)

Time : 3 Hours

Maximum Marks : 38

*(Write your Roll No. on the top immediately  
on receipt of this question paper.)*

*Answer Five questions in all, including*

*Q. No. 1 which is compulsory.*

*Draw labelled diagrams and write*

*Botanical names wherever necessary.*

*Answer all parts of a question together.*

1. (a) Match the following :

- |                         |                       |
|-------------------------|-----------------------|
| (i) Multiple epidermis  | C <sub>4</sub> plants |
| (ii) Gelatinous fibre   | Laticifers            |
| (iii) Root hair         | <i>Nerium</i>         |
| (iv) Tunica layer       | Phloem                |
| (v) <i>Calotropis</i>   | Root                  |
| (vi) Anisocytic Stomata | Trichoblast           |

P.T.O.

(vii) Clove oil	<i>Bryophyllum</i>
(viii) Sieve plate	Shoot apex
(ix) Kranz anatomy	Clearing agent
(x) Quiescent centre	Tension wood

(5)

(b) Fill in the blanks :

(i) Thalamus of *Pyrus* has \_\_\_\_\_ type of sclereids.

(ii) The most common adcrusting substances are \_\_\_\_\_ and \_\_\_\_\_.

(iii) *Salvadora* stem shows the presence of \_\_\_\_\_ phloem.

(iv) Phloem wedges are present in the stem of \_\_\_\_\_.

(v) The three constituents of periderm are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. (2½)

(c) Give one word answer :

(i) Bundles in the pith region.

(ii)  $\text{CaCO}_3$  crystals in the *Ficus* leaf.

(iii) The time interval between the formation of one leaf primordium and the next.

(iv) In wood, elements of xylem are blocked by balloon-like ingrowths.

- (v) Vascular bundles with phloem on either side of Xylem. (2½)
2. (i) What do you understand by fixation and preservation of plant parts? Mention any two most commonly used fixatives with reasons. (3)
- (ii) Explain the role of epidermis and its trichomes in relation to plant defence. (2)
- (iii) Explain the secondary growth in dicot roots. (2)
3. Write notes on **any two** of the following :
- (i) Cell-wall polymers
- (ii) Seasonal activity of Cambium
- (iii) Nodal Anatomy
- (iv) Application of plant anatomy in systematics (3½×2=7)
4. Differentiate between **any two** of the following citing suitable examples.
- (i) Stratified and non-stratified cambium
- (ii) Sieve tubes and companion cells
- (iii) Schizogenous and Lysigenous cavities
- (iv) Sap wood and Heartwood (3½×2=7)

5. (a) Write short notes on any three of the following :

(i) Sequent periderm

(ii) Lenticels

(iii) Laticifers

(iv) Primary Thickening Meristem

(v) Quiescent Centre (2×3=6)

(b) What are shoot chimeras? (1)

6. (i) Explain in detail the Tunica corpus theory of shoot apex organisation. (3)

(ii) Explain the hydrophytic adaptations in root, stem and leaf of water plants. (2)

(iii) Why is phloem not used to count the age of a tree? (2)

7. (i) Describe the structure and function of tracheary elements. (3)

(ii) Where do transfer cells occur in angiosperms? Describe their structure and function. (2)

(iii) Explain the difference between cuticle proper and cuticular layer. (2)