

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 1671

C

Roll No.....

Unique Paper Code : 216401

Name of the Course : B.Sc. (Hons.) Botany

Name of the Paper : Plant Development and Anatomy : BTHT -405

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt five questions in all, including Q. No. 1 which is compulsory.
3. All questions carry equal marks.
4. Attempt all parts of a question together.
5. Draw well labelled diagrams wherever necessary.

1. (a) Fill in the blanks :

(i) Two organelles consistently found in the mature sieve tube member are _____ and _____ .

(ii) A plastid devoid of pigment is called _____ .

(iii) _____ in roots is responsible for the formation of lateral roots.

(iv) Raphides are chemically composed of _____ .

(v) A type of stele in which vascular bundles are arranged in a ring is called _____ . (1×5=5)

(b) Name the genus and organ in which you would study the following :

(i) a plant which never has secondary growth

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- (ii) a plant with multiseriate epidermis
- (iii) a plant with glandular trichome
- (iv) a plant with interxylary phloem
- (v) a plant with stellate parenchyma (1×5=5)

(c) Give short answers of the following :

- (i) Why is phloem not used to determine the age of a tree ?
- (ii) When is the ray termed hetrocellular ?
- (iii) Name two types of short cells found in the leaves of grasses.
- (iv) Name the histogens of shoot apex.
- (v) What do you understand by cambial zone ? (1×5=5)

2. (a) Draw labelled diagrams of (**any four**) :

- (i) Stomata of *Saccharum* leaves
- (ii) T. S. of amonocot root
- (iii) T. S. of a lenticel
- (iv) T. S. angular collenchyma
- (v) T.S. of lithocyst
- (vi) T. S. *Casuarina* stem (2.5×4=10)

(b) Describe the secondary growth in dicot roots with the help of diagrams. (5)

3. (a) Describe the structure and function of phellogen. What is rhytidome ? (5)
- (b) Discuss the internal secretory structures giving suitable examples. (5)
- (c) What is quiescent centre ? Also describe the Korper-Kappe theory of root apex organization. (5)

4. Differentiate between **any five** :

(a) Incrustation and adcrustation

(b) Juvenile and adult wood

(c) Dorsiventral and isobilateral leaf

(d) Fusiform and ray initials

(e) Vessels and tracheids

(f) Parenchyma and sclerenchyma

(3×5=15)

5. Write short notes on **any five** of the following :

(a) Seasonal activity of cambium

(b) Primary thickening meristem

(c) Reaction wood

(d) Shoot chimeras

(e) Root cap and its function

(f) Pharmacognosy

(g) Tunica Corpus theory

(3×5=15)

6. (a) What is unusual cambial activity ? Describe with reference to the old stem of any one of the genus: *Bignonia* / *Aristolochia*. (6)

(b) Describe the anatomical adaptations of hydrophytes / halophytes with suitable examples. (6)

(c) Sieve elements and companion cells have a close functional relationship. Discuss. (3)

P.T.O.

7. (a) Comment briefly (**any three**)

(i) Transfer cells and wall ingrowths

(ii) Pits and plasmodesmata

(iii) Hydathodes

(iv) Concept of cambial zone

(3×3=9)

(b) Describe the cytodifferentiation of a sieve tube member from a meristematic cell with suitable diagrams. (6)