63(FY) SEM–4/MAJ/BOTMAJ2044

2025

BOTANY

(Major)

Paper : BOTMAJ2044

(Anatomy of Angiosperms)

Full Marks : 50

Pass Marks : 20

Time : Two hours

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

1. Choose the correct answer : 1×5=5

   (i) Which of the following dermal tissue structures is involved in transpiration ? 1

   (A) Trichomes

   (B) Root hairs

   (C) Hypodermis

   (D) Lenticels

(ii) Which process is responsible for the formation of a waxy layer on the surface of leaves to reduce water loss? 1

(A) Apposition

(B) Adcrustation

(C) Intussusception

(D) Incrustation

(iii) Which theory explains the growth of Fern shoots and roots? 1

(A) Apical cell theory

(B) Histogen theory

(C) Korper-Kappe theory

(D) Tunica - Corpus theory

(iv) In diffuse-porous woods, the vessels are: 1

(A) Large in spring, small in summer

(B) Largest in winter, small in spring

(C) Similar in size and uniformly distributed

(D) Present only in latewood

(v) Which anatomical feature is specifically associated with C4 plants like maize and sugarcane?

(A) Sunken stomata

(B) Kranz anatomy

(C) Lenticels

(D) Hydathode

2. Answer the following questions : ***(any five)*** 2×5=10

(a) What is the basic difference between promeristems, meristems, and cambium?

(b) What is Korper-Kappe theory? What is the function of the 'Korper' region in the Korper-Kappe theory of root development? 1+1=2

(c) What are lithocysts? What is their function in plants? 1+1+2

(d) How does the cuticle help plants adapt to dry environments?

(e) What is interfascicular cambium? How does it differ from fascicular cambium? 1+1=2

(f) What are pits ? Mention its types.

(g) What is exodermis in plants ? How does exodermis help plants in water retention ? 1+1=2

3. Answer the following questions : ***(any five)*** 5×5=25

(a) Discuss how plant anatomy is applied in systematics, highlighting specific examples of anatomical features used for plant classification and identification.

(b) Discuss the steps involved in the formation of lateral roots in plants.

(c) What is adcrustation ? Briefly discuss the types of materials commonly involved in adcrustation. 3+2=5

(d) Give the anatomical differences between roots of xerophytes and hydrophytes.

(e) Classify vascular bundles based on the arrangement of xylem and phloem.

(f) Write a comparative acount of moncot and dicot stomata. Include shape, arrangement, and distribution.

(g) Define reaction wood. Describe its formation, types, and its function in plants. 1+4=5

(h) What is Cambium ? Explain the seasonal activity of vascular cambium in temperate regions. How does this activity result in the formation of annual growth rings in woody plants ? 1+4=5

4. Answer the following questions : ***(any one)*** 10×1=10

(a) Explain the process of secondary growth in dicot plants, emphasizing the role of cambium in the formation of secondary vascular tissues and bark.

(b) Explain the structure, types, and functions of trichomes in plants, How do these structures contribute to the plant's defence mechanisms ?
