[This question paper contains 8 printed pages.]

Your Roll No.....

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Sr. No. of Question Paper : 4876

Unique Paper Code : 42164301

Name of the Paper : Plant Anatomy and Embryology

Name of the Course : B.Sc. (Life Science – DSE)

Semester : III

Maximum Marks : 75

Duration : 3 Hours

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Section A** and **Section B** on separate sheets.
3. All parts of a question must be answered together.
4. Supplement your answer with well labelled diagram.

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Section A (37 marks)

Attempt **three** *questions from* **Section A** *including Question number* **1**, *which is compulsory.*

1. (a) Give one word answer **(attempt any three)** (1×3=3)

(i) The multiple epidermis to prevent loss of water is present in which type of plants?

(ii) Lateral roots originate from which part of the primary root?

(iii) Which type of collenchyma has thickening mainly at the angles of the cells?

(iv) Name the cell in which cystolith occurs.

(v) What is the name of the vascular bundle that has phloem on either side of the xylem?

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(b) Match the following **(attempt any four)** (1×4=4)

(i) Aerenchyma	*Nerium*
(ii) Quiescent centre	Endodermis
(iii) Casparian strips	Root
(iv) Sunken stomata	*Zea mays*
(v) Bulliform cells	Korper-kappe theory
(vi) Schuepp	hydrophytes

2. Attempt **any three** of the following : (5×3=15)

(i) Describe Kranz anatomy.

(ii) Differences between simple and complex tissues.

(iii) Anatomical differences between monocot and dicot Stem.

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(iv) Draw well labelled diagram of T.S. *Hydrilla* stem.

(v) Seasonal activity of cambium.

3 (a) Describe secondary growth in dicot roots with the help of suitable diagrams. (7.5)

(b) Describe anatomical adaptations of hydrophytes with suitable examples. (7.5)

4 (a) Describe the Metcalfe and Chalk's classification of stomata with suitable diagrams. (10)

(b) Discuss various theories explaining the organisation of root apex. (5)

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SECTION B (38 marks)

Attempt **three** *questions from* **Section B** *including Question number* **1**, *which is compulsory.*

1. (a) Define the following **(attempt any four)** (1×4=4)

(i) Porogamy

(ii) Hydrophily

(iii) Endothelium

(iv) Aril

(v) Perisperm

(vi) Aleurone layer

(b) Match the following **(attempt any four)** (1×4=4)

(i) Composite endosperm Absence of endosperm

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(ii) Double fertilization	Loranthceae
(iii) Pollination by bats	S.G. Nawaschin
(iv) Podostemaceae	Synergids
(v) Circinotropous ovule	Chiropterophily
(vi) Filliform apparatus	Cactaceae

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

(i) Anther wall layers.

(ii) Double Fertilization in angiosperms.

(iii) Types of Tapetum.

(iv) Differences between Nuclear and Cellular endosperm.

(v) Structure and organization of egg apparatus.

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3. Attempt **any three** of the following: (5×3=15)

(i) Draw well labelled diagram of T.S. tetrasporangiate anther at tetrad stage.

(ii) Draw well labelled diagram of L.S. monocot embryo.

(iii) Draw well labelled diagram of L.S. anatropous bitegmic ovule showing *Polygonum* type of embryo sac.

(iv) Differences between Monosporic and Tetrasporic embryo sac.

(v) Discuss embryo-endosperm relationship.

4. Attempt **any two** of the following: (7.5×2=15)

(a) Discuss the adaptive features of anemophilous plants

(b) Describe different types of ovules found in angiosperms.

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(c) Name five eminent embryologists along with their significant contributions in the field of embryology.

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