

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 6917

D

Your Roll No.....

Unique Paper Code : 216553

Name of the Course : B.Sc. (Prog.) Life Sciences

Name of the Paper : Developmental Biology and Physiology : Plants (LSPT-511)

Semester : V

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. This paper contains six questions. Attempt any five questions in all.
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 (any five) (1×5=5)

(i) The colour, odour and stickiness of pollen grains are because of

_____.

(ii) Ovules in which the nucellus is scanty or single layered are known as

_____.

(iii) _____ refers to maturation of male and female sex organs at different times.

(iv) Occurrence of rejection reaction in the style is characteristic feature of _____ self-incompatibility.

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- (v) Übisch bodies are a characteristic feature of _____ tapetum.
- (vi) Pollen tube contents are generally discharged inside the _____ cell of the embryo sac.
- (b) Explain with suitable diagrams the process of megasporogenesis and megagametogenesis leading to the development of *Polygonum* type of embryo sac. (5)
- (c) Describe the floral characteristics in anemophilous and entomophilous plants. (5)
2. (a) Write short notes (any four) : (4×2.5=10)
- (i) Pollen Wall
 - (ii) Synergids
 - (iii) Amoeboid Tapetum
 - (iv) Hypostase
 - (v) Sporophytic Self- incompatibility
- (b) Differentiate between (any two) : (2×2.5=5)
- (i) Vegetative and Generative cell
 - (ii) Porogamy and Chalazogamy
 - (iii) Embryo and Endosperm

3. Write short notes (**any three**) : (3×5=15)

- (i) Criteria of essentiality of mineral nutrients
- (ii) Theory of K^+ ion accumulation for stomatal opening and closing
- (iii) Photoperiodism
- (iv) Polar transport of auxin
- (v) Source-sink relationship with reference to phloem translocation

4. Differentiate between (**any five**) : (5×3=15)

- (i) Transpiration and Guttation
- (ii) C_3 and C_4 Cycle
- (iii) Hydroponics and Aeroponics
- (iv) Phytochrome and Cryptochrome
- (v) Action and Absorption Spectrum
- (vi) Apoplastic and Symplastic movement

5. (a) What are CAM plants ? Give the mechanism of carbon fixation in CAM plants. (6)

(b) Discuss the physiological roles of ethylene and its commercial applications. (6)

(c) What is water potential ? What are its components ? (3)

6. (a) Explain the physiological roles and deficiency symptoms caused by any two micro and macroelements studied by you. (9)
- (b) Write the significance of Emerson Enhancement and Red drop effect. (6)