

IAS Mains Botany 2003

Paper-II

Section-A

1. Answer any THREE of the following in about 200 words each $20 \times 3 = 60$
 - a. Evolution.
 - b. Gametophytic apomix.
 - c. Pure Line Selection.
 - d. Structure and Significance of Lamp brush Chromosomes.
2. Answer the following questions
 - a. Describe in detail the physical properties of cell membrane. 30
 - b. How does the water and solutes move through the cell membrane? 30
3. Answer the following questions
 - a. What is Cytoplasmic inheritance? 10
 - b. Describe the Cytoplasmic-genetic male sterility. 20
 - c. Describe in detail the method of producing hybrid seeds using Cytoplasmic-genetic male sterility system. 30
4. Answer the following questions
 - a. What do you understand by genetic engineering? 15
 - b. Describe in detail the agro bacterium-mediated gene transfer method for producing transgenic plants. 45

Section-B

5. Write short notes on any THREE of the following in about 200 words each: $20 \times 3 = 60$
 - a. CO₂ fixation in C₄ plants
 - b. Seed germination
 - c. Global warming
 - d. Conservation of biodiversity
6. Answer the following questions
 - a. What do you understand by verbalization? Discuss the factors that influence verbalization. 40
 - b. Describe the practical significance of verbalization. 20
7. Answer the following questions
 - a. What do you understand by a biotic stresses? 20

b. Describe in detail the mechanism of salt stress on plants. 30

c. Describe the effect of salt stress on plant growth. 10

8. Answer the following questions

a. What do you understand by eco-system? 10

b. How would you maintain an eco-system? 50