CSM – 15/16
Botany
Paper – II

Time : 3 hours

Full Marks : 300

The figures in the right-hand margin indicate marks.

Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and any **three** *of the remaining questions, selecting at least* **one** *from each Section.*

SECTION – A

1. Answer any **three** of the following : 20×3 = 60

   (a) Draw a neat, labelled sketch of an ultastructural view of a plant cell.

   (b) Name the semi-autonomous organ in the plant cell. Why is it called so ? What is their role in the cellular metabolism ?

   (c) Write an essay on the signal transduction.

(d) Outline the structure of polythene and beta chromosomes. Add a note about their significance in the cell.

2. (a) Write briefly about molecular basis of sex differentiation in plants.

(b) Differentiate spontaneous mutation with that of artificial mutation. What is the need for artificial mutation. Explain their molecular basis.

(c) What is the role of endoplasmic reticulum and write briefly about the role of ribosomes in protein synthesis.　　　　20×3 = 60

3. (a) What is cytoplasmic inheritance ? How is it different from that of sex-linked inheritance.

(b) Briefly outline the structure and synthesis of DNA.

(c) What is the role of molecular markers in plant breeding ?　　　　20×3 = 60

4. (a) List out various methods employed in plant breeding and what for plant breeding is carried out.

(b) Write any two methods employed for direct method transfer in plants.

(c) How will you develop plants for herbicide ? resistance. Illustrate with suitable examples.

20×3 = 60

SECTION – B

5. Answer any **three** of the following in **200** word each : 20×3 = 60

(a) How do mineral ion transport takes place in plants ?

(b) What are C3 and C4 cycle ? Outline both of them with four differences between each .

(c) Outline the classification of enzymes. Add a note on co-enzymes and their biological importance.

(d) What is fermentation ? List out their importance.

6. (a) What is the role of photoperiodism in flowering ?

(b) How will you map the growth of an organism ? Illustrate your answer with an example.

30×2 = 60

7. (a) What is the role of growth hormones (both chemicals and gaseous) in agriculture and horticulture.

(b) Write a short essay on stress physiology induced by salinity and metals. $30 \times 2 = 60$

8. (a) What is a biosphere ? Let out any three biospheres present in India with suitable examples.

(b) What is phytoremediation ? How will you apply it for abatement of pollution ?

(c) Write an essay on the different forest types present in Odisha State. $20 \times 3 = 60$

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