CSM – 7/20

Agriculture

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 in about **200** words each : 20×3 = 60

   (a) Distinguish between the following with suitable examples.

   (i) Aerobic and Anaerobic Respiration

   (ii) Orthodox Seeds and Recalcitrant Seeds

(iii) Gametophytic and Sporophytic Self-incompatibility

(iv) Varietal seed production and Hybrid seed production

(v) Photoperiodism and Vernalisation

(b) Brief chromosomal aberrations and its types.

(c) Illustrate the differential photosynthetic pathways of rice, sugarcane and pineapple.

(d) Give a detailed account on role of plant growth regulators in agriculture.

2. Answer any **three** of the following in about **200** words each : 20×3 = 60

(a) It is a widely accepted belief that the eukaryotic semiautonomous organelles are evolved from free living bacterial ancestors. What are the semiautonomous organelles in plant cells and why they are called so ? Illustrate with diagram the structure of the semiautonomous organelles in plant cells and list their functions.

(b) Give a short notes of physiological process : Osmosis, Diffusion, Transpiration, Surface tension, Imbibition.

(c) Define seed dormancy. What are the types of seed dormancy ? Explain the process of seed germination and how Gibberellic acid helps in seed germination ? List the methods for breaking the seed dormancy.

(d) Explain the central dogma of life.

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

(a) Explain the mechanism of water absorption in plants. Discuss about the factors affecting absorption of water.

(b) Explain synthesis, mode of action of plant hormones and their physiological roles : Auxin, Gibberellin, Cytokinin, Abscisic, Ethylene

(c) Illustrate with diagram the stages of mitotic and meiotic cell divisions and enlist their significance. How mitotic cell division differs from meiosis.

(d) Role of public and private sectors in seed production, processing and marketing in India.

4. Define plant tissue culture, totipotency, differentiation, dedifferentiation and redifferentiation. How organogenesis differs from embryogenesis and zygotic embryo differs from somatic embryo ? Elaborate on different plant tissue culture techniques. Explain with banana as a case study for production of virus free plantlets using tissue culture techniques. 60

SECTION – B

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

(a) What is mushroom farming and explain the process involved in mushroom farming in India ?

(b) Write about climatic requirement and cultivation practices of mango and tomato.

(c) Write about pesticide formulations and mode of actions.

(d) Explain the meaning, advantages and methods in forecasting plant diseases with examples.

6. Briefly explain integrated pest, disease management and explain the use of biological control for pest with mode of actions and advantages. 60

7. Answer any **three** of the following in about **200** words each : 20×3 = 60

(a) What are the different types of pruning and training done in cultivation process of vine (grapes) ?

(b) Illustrate the diseases of rice and its management.

(c) Write about the honey bee colonies, its natural organization system in a bee hive and seasonal cycles of activities in colonies.

(d) Explain, in detail, about storage insect pests and their management.

8. Give a brief description of the role, importance and challenges of Food Safety and Standard Authority of India. 60