

AGRICULTURE

94

PAPER—II

Time Allowed : Three hours

Maximum Marks : 300

The figures in the margin indicate full marks for the questions

Answer Question Nos. 1 and 5 which are compulsory and **any three** of the remaining questions, selecting at least **one** from each Section

SECTION—A

1. Answer any *ten* of the following in about 60 words each : 6×10=60
 - (a) Write a note on cell theory.
 - (b) Point out the differences and similarities between mitochondria and chloroplasts.
 - (c) Explain the importance of linkage and crossing-over.
 - (d) Do you think that mutation has any role in crop improvement? Explain.
 - (e) Explain hybrid vigour.
 - (f) Explain the role of tRNA in protein biosynthesis.
 - (g) What are the pigments present in plants? How does chlorophyll differ from haemoglobin?
 - (h) What measures should be taken to conserve plant genetic resources?
 - (i) What is sex-linked inheritance? Explain.
 - (j) Write a note on the centre of origin of crop plants.
 - (k) How does C₄ photosynthesis differ from C₃ photosynthesis?
2. Discuss the mechanism of absorption and translocation of water in plants. 60
3. Define photosynthesis. In the light of modern research, explain the mechanism of light-dependent reactions of photosynthesis. 60
4. Describe the double helical structure of deoxyribonucleic acid. What are the biological functions of DNA? 60

SECTION—B

5. Answer any *ten* of the following in about 60 words each : 6×10=60

- (a) What are the differences between growth and development?
- (b) Define plant hormones and show how they are different from vitamins.
- (c) How do molybdenum and boron deficiency affect cole crops? What measures are taken to control such deficiency?
- (d) What are the common ascorbic-acid rich fruits grown in Assam? How are they important in maintaining normal health of people?
- (e) What is biological control of pests? Is it advantageous over chemical methods?
- (f) What are the different types of chemical pesticides? How are they toxic to people? Which one is less persistent in the environment?
- (g) "Biological magnification exposes organisms high on the food chain to potentially dangerous levels of persistent toxicants." Explain.
- (h) What is epidemiology? Explain.
- (i) What is the importance of pruning of fruit trees?
- (j) What is an auxin? How does an auxin work?
- (k) What are the changes that occur during ripening of fruits? Explain the role of ethylene in fruit ripening.

6. Write an essay on the biological impact of pesticides. 60

7. Define seed germination and dormancy. What biochemical changes occur during the germination of seeds? Describe the methods adopted to break dormancy of seeds. 60

8. Describe the principal methods employed for the preservation of fruits. What are temporary and permanent preservations? 60
