OPSC Assistant Conservator of Forests

Previous Year Paper

(ACF) 2015

Botany Paper-II

FS – 8 / 15-16

Botany

Paper – II

Time : 3 hours

Full Marks : 200

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. Write explanatory notes on any **two** of the following : 20×2 = 40

   (a) Ultrastructure and functions of endoplasmic reticulum

   (b) Sex linked inheritance

   (c) Role of RNA in evolution

2. (a) Distinguish between auto – and allopolyploids. Mention the possible ways in which polyploidy can occur in plants. Comment on the significance of polyploidy. 20

(b) Explain, with example, the phenomenon of regulation of gene expression with reference to induction and repression of enzyme synthesis. 20

3. (a) Give a brief account of the mechanism of protein synthesis in eukaryotic cells. 20

(b) What are the major changes that take place during fruit ripening ? Explain the molecular basis of fruit ripening. Elucidate the role of ethylene in fruit ripening. 20

4. (a) What is meant by ecosystem management ? Discuss, with example, the different methods of ecosystem conservation. 20

(b) Describe the formation of root nodules in leguminous plants. Explain the role of leghaemoglobin in N_2-fixation. Comment on the genes regulating N_2-fixation. 20

SECTION – B

5. Answer any **two** of the following : 20×2 = 40

(a) What are secondary metabolites ? Describe the importance of secondary metabolites in plants.

(b) Give an account of the different methods used in gene mapping.

(c) What is Phytoremediation ? Describe, with example, the role of phytoremediation in the control of heavy metal pollution.

6. (a) Give an illustrated account of nutrient transport across the membrane by passive diffusion and active transport mechanisms. 20

(b) What is Photophosphorylation ? Compare and contrast between cyclic and non-cyclic photophosphorylation. 20

7. (a) Describe the major biotic and abiotic factors influencing plant life, growth and productivity. 20

(b) Explain the causes and consequences of global warming. Describe the possible ways to control global warming. 20

8. (a) Define Micropropagation. Describe the common methods used for micropropagation of plants. What are the advantages and disadvantages of micropropagation ? 20

(b) Classify the types of forests in India. Give an account of the characteristic features of each of the forest types. 20