

2015

BOTANY

[Honours]

PAPER – IV

Full Marks : 90

Time : 4 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

GROUP – A

1. Answer any *ten* of the following : 2 × 10
- (a) Define water potential mentioning its components.
- (b) What are capillary and gravitational water ?

- (c) What are excited singlet state and triplet state of electron ?
- (d) What are nod and nit genes ?
- (e) Give example each of a sulfur-containing amino acid and non-protein amino acid.
- (f) Define day neutral plants with an example:
- (g) D-fructose is laevorotatory -- Justify.
- (h) Name any four phytogeographical regions of India.
- (i) What is meant by 'greenhouse' effect ?
- (j) Write the full form of GIS.
- (k) Define isozyme with example.
- (l) Define wetland with a common example.
- (m) Define 'ecotone' and 'Edge effect'.
- (n) Write the specific functions performed by transcriptase and RNA polymerase.

- (o) Give one example from each of biotic and abiotic pollutants.

GROUP – B

2. Answer any *five* questions : 8 × 5
- (a) What are the criteria of essentiality of mineral elements ? Write a brief note on the physiological roles of any three macro-elements for plants. 2 + 6
- (b) How many ATP molecules are generated upon complete oxidation of a glucose molecule ? Schematically represent the TCA cycle mentioning the enzymes involved in the process. 1 + 7
- (c) What are phloem loading and unloading ? Describe in brief the mechanism of the processes. 2 + 6
- (d) How does dormancy differ from quiescence ? Write down the causes and significance of seed dormancy. 2 + (3 + 3)

- (e) What is peptide bond ? Describe in brief the secondary structure of protein. 2 + 6
- (f) What is biogeochemical cycle ? Depict the carbon cycle mentioning its importance. 2 + 6
- (g) What is ozone hole ? Discuss the harmful effects of ozone depletion. 2 + 6
- (h) Describe the vegetation types of Indian Sunderban. Write down the scientific names of two Indian Mangroves. 6 + 2

GROUP – C

3. Answer any *two* of the following : 15 × 2
- (a) Define natural and synthetic plant growth regulators citing one example of each. Enumerate the major physiological roles of gibberellins and ethylene. Add a note on the application of plant growth regulators in agrihorticulture. 3 + 8 + 4
- (b) Distinguish between cyclic and non-cyclic photophosphorylation. Briefly describe regeneration of RuBP operated during dark

phase of photosynthesis with a neat schematic representation. Write a comparative account of C_3 and C_4 cycles of carbon fixation process. 4 + 6 + 5

- (c) Classify plants on the basis of their ecological adaptation citing examples from each class. Write a comprehensive note on the significant adaptations noted in xerophytes and hydrophytes. 5 + (5 + 5)
- (d) Write short notes on (any five) : 3 × 5
- (i) Social forestry
 - (ii) Joint forest management (JFM)
 - (iii) Biodiversity conservation
 - (iv) Vegetation of Eastern Himalayas
 - (v) Outline classification of enzymes
 - (vi) Biomonitoring of environmental pollution
 - (vii) Nodulation in leguminous plants
 - (viii) Types of DNA molecule.
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