M.Sc. Part-II Examination, 2012

BOTANY

PAPER – VII

Full Marks : 60

Time : 3 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

Answer **Q.No. 1** and any **three** from the rest

1. (*a*) Answer any *six* of the following : 2 × 6

(*i*) What are CAM plants ?

(*ii*) Write down the full forms of DCMU and 2,4-D.

(*iii*) Mention the dual role performed by Rubisco.

(*iv*) Define 'nod' and 'nif' genes.

(*v*) What are phytochromes ?

(*vi*) Distinguish between entropy and enthalpy.

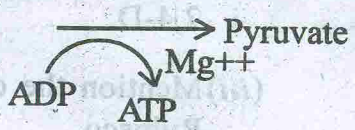
(*vii*) What are homo– and hetero poly-saccharides ?

(*viii*) Distinguish between innate and induced dormancy.

(*ix*) Differentiate between coenzyme and cofactor.

(*b*) Name the enzymes which catalyse the following reactions (any *three*) : 1 × 3

(*i*) Phosphoenol pyruvate



(*ii*) α-ketoglutarate → Succinyl-CoA

NAD⁺ NADH+H⁺

(*iii*) Fructose 1, 6-bisphosphate ⇌ Glycerol dehyde-3 phosphate

(*iv*) Fumarate ⇌ Malate

H_2O

(*v*) Fructose 6-phosphate

ATP ADP

Fructose 1, 6-bisphosphate.

2. How phytohormones differ from plant growth regulators ? Write down the chemical structure and bioassay of IAA. Enumerate the practical application of auxin in agri-horticulture. 3 + (2 + 4) + 6

3. Mention the important events of seed germination. Distinguish between innate and induced dormancy of seeds. Write a comprehensive note on physical and chemical manipulative methods of breaking seed dormancy. 3 + 2 + 10

4. Define protein and non-protein amino acid citing one example of each. Give an outline classification of protein amino acids. What are essential amino acids ? 3 + 10 + 2

5. Distinguish between competitive and non-competitive inhibition of enzymes. Write a detailed note on the mechanism of enzyme action. What is meant by feedback inhibition ? 3 + 10 + 2

6. Write short notes on any *three* of the following : 5 × 3

   (*i*) Energy currency in plant system ;

   (*ii*) Regeneration of RuBP in the dark phase of photosynthesis ;

   (*iii*) Biochemistry of nitrogen fixation ;

   (*iv*) Thin layer chromatography ; and

   (*v*) Classification of plants on the basis of critical day length (CDL).