2008

M.Sc. Part–II Examination

BOTANY

PAPER—VII

Full Marks : 60

Time : 3 Hours

The figures in the margin indicate full 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) Define growth promoters and growth retardants.

    (ii) Define seed germination as per ISTA regulation.

    (iii) What is Cl Photosynthesis ?

    (iv) Write down the full forms of ACC and CCC.

    (v) Name and draw the chemical structures of an aldohexose and a ketohexose.

    (vi) What are heat-shock proteins ?

    (vii) What do you mean by Michaelis–Menten constant ?

    (viii) Define posthetic groups and co-factors.

    (ix) Give examples and structures of one sulphur containing amino acid and one aromatic amino acid.

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

(i) Glyceraldehyde 3P $\rightleftharpoons$ Dihydroxyacetone phosphate

(ii) Phosphoenol pyruvate + CO_2 + H_2O $\longrightarrow$ Oxaloacetate.

(iii) Pyruvic acid + Glutamic acid $\rightleftharpoons$ Alamine + α-ketogluteric acid.

(iv) Carbamoyl phosphate + L-spertate $\longrightarrow$ N-Carbomyl-Laspertate + pi.

(v) Glycolate + O_2 $\longrightarrow$ Glyoxylate + H_2O_2.

2. Write notes on the following (any *three*) : 5×3

(a) Spectrophotometry.

(b) HPLC.

(c) Ion exchange chromatography.

(d) Path of carbon in photosynthesis.

(e) Leghaemoglobin.

3. Name the subcellular particles where photorespiratory reactions are operated ? Write down the mechanism of photorespiration mentioning the enzymes involved therein. Name *one* photorespiratory inhibitor. 3+11+1

4. What are innate and induced dormancy of seeds ? How can you determine dormant seeds from nonviable ones ? Write a comprehensive note on various chemical and physical manipulative methods of breaking seed dormancy. 2+3+10

5. 'The melting points of fatty acid containing compounds are strongly influenced by the length and degree of unsaturation of the hydrocarbon chain'. Justify the statement. Withdrawn the β-oxidation process of a saturated fatty acid. 3+12

6. What are allosteric enzymes ? What do you mean by feedback inhibition ? Discuss about the kinetics of allosteric enzyme taking ATcase as an example. 2+3+10