2009

M.Sc. Part–II Examination

BOTANY

PAPER—VII

Full Marks : 60

Time : 3 Hours

The figures in the right-hand 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) What is meant by seed invigoration?

(ii) Mention the dual role performed by the enzyme Rubisco.

(iii) What does it mean by oxidative phosphorylation?

(iv) Mention two free living microorganisms which can fix nitrogen.

(v) What are unsaturated fatty acids?

(vi) Name one aromatic amino acid. Write its structure.

(vii) Glucose is a reducing sugar but sucrose is not. Why?

(viii) Define KM.

(ix) What are allosteric enzymes?

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

(i) 3-phosphoglycerate + ATP $\longrightarrow$ 1, 3-bisphosphoglycerate.

(ii) Xylulose 5-Ⓟ + Ribose - 5Ⓟ $\longrightarrow$ Sedoheptulose 7Ⓟ + Glyceraldehyde 3-Ⓟ.

(iii) Glutamic acid + Pyruvic acid $\rightleftharpoons$ α-ketoglutaric acid + α-alanine.

(iv) Acetaldehyde + NADH + H^+ $\longrightarrow$ Ethanol + NAD^+.

(v) Oxaloacetate + ATP $\rightleftharpoons$ Phosphoenolpyruvate + ADP + O_2.

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

(a) Electrophoresis ;

(b) GLC ;

(c) Ethylene biosynthesis ;

(d) Polysaccharides ; and

(e) Phytochromes.

3. Mention the different modes of CO_2 fixation in higher plants ? State the differences between C3 and C4 plants. Point out the biological significance of C4 cycle. 2+10+3

4. What are growth promoters, growth retardants and growth inhibitors ? Write down the chemistry, physiological roles, bioassay and agrihorticultural uses of a natural growth inhibitor. 3+12

5. What is meant by enzyme inhibition ? Describe in detail about different types of enzyme inhibition. What is feed back inhibition ? 1+12+2

6. What is peptide linkage ? What are different types of secondary structures found in protein ? Give a detail account of these structures. Briefly describe about fibrous proteins and globular proteins. 1+10+4
