2016

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 : 6×2

(i) Name two light regulating enzymes of C_4 cycle.

(ii) Name two essential fatty acids.

(iii) How does defruiting delay senescence of the whole plant ?

(iv) Distinguish between innate and induced dormancy of seeds.

(v) What is the difference between starch and cellulose ?

(vi) What do you mean by "tripple response" of ethylene.

(vii) What do you understand by three dimensional conformation of proteins ?

(viii) What is carboxysome ?

(ix) Why do the carotenoid deficient mutants die if exposed to strong light ?

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

(i) Malic acid + $NADP^+$ $\longrightarrow$ CO_2 + Pyruvic acid + NADPH + H^+

(ii) Fructose-6-phosphate + ATP $\rightleftharpoons$ Fructose 1, 6 bisphosphate.

(iii) AMP + ATP $\longrightarrow$ 2ADP

(iv) Oxaloacetate + ATP $\rightleftharpoons$ phosphoenol pyruvate + ADP + O_2

(v) 2 Glycine + $\frac{1}{2}O_2$ $\longrightarrow$ Serine + CO_2 + NH_3

2. (a) Describe the mechanism of photorespiration and add a note on its significance.

(b) Outline the unique importance and activation of Rubisco. 8+7

3. (a) What are indole and non-indole auxins ? Describe the role of auxins in cell elongation and apical dominance. 2+(4+4)

(b) Briefly describe the biochemical changes during seed germination. 5

4. (a) What do you mean by N-terminal and C-terminal of a peptide ? Point out the principal chemical bonds involved to constitute protein structure.

(b) Describe the primary and higher order structures of proteins. 7+8

5. (a) Describe the recent system of classification of enzymes giving examples from each class.

(b) Explain the types of enzyme inhibition with example.

(c) What is Michaelis-Menten constant ? What is its significance ? 6+6+3

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

(i) Oxidative phosphorylation ;

(ii) Reducing and non-reducing sugars ;

(iii) Bioassay method of cytokinins ;

(iv) Principles of electrophoresis ;

(v) Merits and demerits of photorespiation ;

(vi) Draw Lineweaver-Bark plot and express the equation.

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