

2007

BOTANY AND FORESTRY

PAPER-VII

Full Marks : 60

Time : 3 hours

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

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

1. (a) **Answer briefly any six of the following :** $2 \times 6 = 12$
- (i) **In absence of light why 3, PGA content - increases in chloroplast?**
 - (ii) **Why does defruiting delay senescence in the whole plant?**
 - (iii) **Mention the dual role performed by the enzyme Rubisco.**
 - (iv) **What kind of curve would you expect if V_o is plotted against $[S]$ for an allosteric enzyme?**

(Turn Over)

(v) State the composition of LHC-II.

(vi) Distinguish between Pr and Pfr.

(vii) What do you mean by saturated and unsaturated fatty acids?

(viii) Mention one biochemical test for evaluation of seed viability.

(ix) What are nod and nif genes?

(b) Name the enzymes which catalyze the following reactions (any three) :

1 x 3 = 3

(i) Xylulose 5-P + Ribose S-P --> sedoheptulose 7-P + Glyceraldehyde 3-P

(ii) Pyruvate + CoA + NAD⁺ --> Acetyl CoA + CO₂ + NADH + H⁺

Ud) Succinyl CoA + GDP + Pi --> Succinate + CoA.

(iv) Sedoheptulose 7-P + 3-phosphoglyceraldehyde --> Fructose 6-P + Erythrose 4-P.

(v) Glyceraldehyde 3-phosphate --> Dihydroxyacetone phosphate.

2. **Write notes on the following (any *three*):** 5x3 = 15
- (a) Calorimetry
 - (b) Classification of protein amino acids
 - (c) Nitrate assimilation in plants
 - (d) Oxidative phosphorylation
 - (e) Gelelectrophoresis.
3. (a) Distinguish among competitive, uncompetitive and non-competitive enzyme inhibition on the basis of Lineweaver Burk plots and examples. 7
- (b) **What is meant by enzyme kinetics ? Deduce Michaelis -Menten rate equation of enzyme kinetics involving a single substrate.** 8
4. **What do you understand by three dimensional conformation of proteins ? What bonds are involved in the spatial structure of proteins ? Briefly discuss the secondary structure of proteins with a special mention to stretched state and helical state of proteins.** .2+4+9 = 15
5. Describe Co₂ concentrating mechanism and its regulation in CAM plants. What do you mean by CAM idling? 8+5+2 = 15

6. **Point out the criteria which are not fulfilled by ethylene with respect to its true hormonal status. Describe with a flow chart the methionine cycle of ethylene biosynthesis. Mention two vital physiological roles of ethylene.** 3+10+2= 15