

**2015**

**( 6th Semester )**

**BOTANY**

**ELEVENTH PAPER**

**( Plant Metabolism, Biochemistry  
and Thermodynamics )**

*Full Marks : 55*

*Time : 2½ hours*

**( PART : B—DESCRIPTIVE )**

*( Marks : 35 )*

*The figures in the margin indicate full marks  
for the questions*

**1. Elucidate the mechanism of DNA replication. 7**

*Or*

**Write notes on the following : 3½+3½=7**

**(a) Synthesis of amino acids**

**(b) Synthesis of starch**

( 2 )

2. Briefly describe the mechanism of protein synthesis with labelled diagram. 7

Or

Give accounts on the following :  $3\frac{1}{2}+3\frac{1}{2}=7$

- (a) Basic aspects of protein conformation  
(b) Induced fit model

3. Write accounts on the biosynthesis of the following :  $3\frac{1}{2}+3\frac{1}{2}=7$

- (a) Auxins  
(b) Gibberellins

Or

Write notes on the mode of action of the following :  $3\frac{1}{2}+3\frac{1}{2}=7$

- (a) Abscisic acid  
(b) Ethylene

4. Describe the mechanism of pentose phosphate pathway. 7

Or

Give brief accounts on the following :  $3\frac{1}{2}+3\frac{1}{2}=7$

- (a) Photosynthetic apparatus  
(b) Non-cyclic electron transport

( 3 )

5. Describe the following :

$3\frac{1}{2}+3\frac{1}{2}=7$

(a) First law of thermodynamics

(b) Concept of free energy

Or

Describe the following :

$3\frac{1}{2}+3\frac{1}{2}=7$

(a) Second law of thermodynamics

(b) Entropy change

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( PART : A—OBJECTIVE )

( Marks : 20 )

*The figures in the margin indicate full marks for the questions*

SECTION—A

( Marks : 5 )

1. Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

(a) DNA replication starts at a specific point is called

- (i) Okazaki fragment ( )
- (ii) origin ( )
- (iii) primer site ( )
- (iv) replication fork ( )

(b) Certain enzymes in addition to their protein structure have a non-protein group attached to them is called

(i) coenzyme ( )

(ii) isoenzyme ( )

(iii) apoenzyme ( )

(iv) allosteric enzyme ( )

(c) The main pathway of gibberellic acid has been worked out in

(i) *Cannabis sativa* ( )

(ii) *Phoenix dactylifera* ( )

(iii) *Gibberella fujikuroi* ( )

(iv) *Gibberella caudatus* ( )

(d) If a reaction is being carried out at constant temperature and pressure, the change in quantity is called

(i) internal energy ( )

(ii) entropy ( )

(iii) enthalpy ( )

(iv) free energy ( )

(e) The light dependant reaction of photosynthesis takes place in

(i) stroma ( )

(ii) grana ( )

(iii) whole chloroplast ( )

(iv) both grana and stroma ( )

( 4 )

SECTION—B  
( Marks : 15 )

2. Write notes on the following :

3×5=15

(a) Isozymes

( 8 )

(b) Harvestation of light energy



( 6 )

(c) Biological nitrogen fixation

(d) Concept of internal energy

( 8 )

(e) Protein conformation

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