6 SEM TDC BOTH (CBCS) C 13

2025

(May)

BOTANY

(Core)

Paper : C–13

(Plant Metabolism)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct answer :   1×5=5

   (a) As a result of photosynthesis, hexose sugars are formed which are often converted into sucrose and starch in

   (i) cytosol and chloroplast respectively

   (ii) chloroplast and cytosol respectively

   (iii) cytosol only

   (iv) chloroplast only

(b) The law of limiting factor was enunciated by

    (i) A. A. Benson

    (ii) F. F. Blackman

    (iii) van Niel

    (iv) Arnon

(c) The end product of gluconeogenesis is

    (i) glycerol

    (ii) acetyl CoA

    (iii) glucose

    (iv) pyruvate

(d) The enzyme nitrogenase is extremely sensitive to

    (i) hydrogen

    (ii) nitrogen

    (iii) sulphur

    (iv) oxygen

(e) Ligands are

    (i) first messengers

    (ii) signal transducers

    (iii) second messengers

    (iv) All of the above

        (Continued)

2. Write short notes on any *three* of the following :
$4 \times 3 = 12$

   (a) Photosynthetic pigments

   (b) Amphibolism

   (c) C_4 cycle

   (d) Second messengers

   (e) Cyanide-resistant respiration

3. Write explanatory notes on any *two* of the following :
$6 \times 2 = 12$

   (a) Chemiosmotic mechanism of ATP synthesis

   (b) β-oxidation of fatty acids

   (c) Synthesis and degradation of starch

   (d) Glycolysis

   (e) Role of regulatory enzymes in metabolism

4. What is photophosphorylation? Give an account of cyclic and non-cyclic electron transport in photosynthesis. Mention the difference between cyclic and non-cyclic photophosphorylation.
$1 + (4 + 5) + 2 = 12$

Or

What is photorespiration? Explain the various steps involved in the process and mention its significance.
$2 + (8 + 2) = 12$

5. Describe the citric acid cycle in plants. How can this cycle be regulated?   9+3=12

Or

Define gluconeogenesis. How does gluconeogenesis differ from glycolysis? Describe the steps involved in glyoxylate cycle.   2+2+8=12

★ ★ ★