Total number of printed pages–7

63/1 (SEM–6) CC13/BOTHC6136

2024

BOTANY

Paper : BOTHC6136

(Plant Metabolism)

Full Marks : 60

Pass Marks : 24

Time : Three hours

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

1. Choose the correct option : ***(any five)*** 1×5=5

   (a) Which of the following is popularly known as 'Power house of the cell'?

   (i) Ribosomes

   (ii) Lysosomes

   (iii) Mitochondria

   (iv) Golgi aparatus

Contd.

(b) In the non-cyclic photophosphorylation, electrons flow from water molecule ultimately to

(i) ATP

(ii) NADP+

(iii) plastoquinone

(iv) ferredoxin

(c) The types of photosynthesis occur in plants are

(i) C_3 and C_4 pathways

(ii) C_3 and CAM pathways

(iii) C_3, C_4 and CAM pathways

(iv) Calvin cycle and HSK pathways

(d) Sucrose is a

(i) monosaccharide

(ii) disaccharide

(iii) polysaccharide

(iv) protein

(e) For chemical nitrogen fixation, which of the following is an effective catalyst ?

(i) Alpha rays

(ii) Titanium

(iii) Uranium

(iv) Thorium

(f) Steroids are

(i) derived lipids

(ii) compound lipids

(iii) simple lipids

(iv) proteins

(g) In lactic acid fermentation

(i) ATP is produced

(ii) ATP is not produced

(iii) NADH is produced

(iv) $FADH_2$ is produced

(h) In aerobic respiration oxygen is utilized

(i) at the end of ETS

(ii) at the beginning of ETS

(iii) in glycolysis

(iv) in TCA cycle

(i) The name of 'Father of Agricultural Chemistry' is

(i) C. Bernard

(ii) J. J. Berzelius

(iii) J. von Liebig

(iv) E. Buchner

(j) In symbiotic nitrogen fixation by Azolla, Anabaena, Azolla is a/an

(i) alga

(ii) fungus

(iii) aquatic fern

(iv) terrestrial fern

2. Answer the following questions : ***(any five)*** 2×5=10

(a) What do you mean by anaerobic respiration ?

(b) List *three* important functions of carbohydrate catabolic pathways.

(c) How is nitrogen assimilated ?

(d) What are coenzymes ?

(e) How can TCA cycle be regulated ?

(f) How is sucrase synthesized ?

(g) What are receptors of a cell ?

3. Answer the following questions : ***(any five)*** 5×5=25

(a) What is abiotic nitrogen fixation ?

(b) Explain the process of fermentation of alcohol.

(c) What are fatty acids ? Give *two* examples.

(d) What is oxidative phosphorylation ?

(e) Write about the mechanism of crassulacean acid metabolism.

(f) What is cyanide-resistant respiration in plant?

(g) Distinguish between cyclic and non-cyclic photophosphorylation.

(h) Write a note on efficiency of β oxidation.

(i) Write a short note on the role of internal factors in respiration.

4. Answer the following questions : ***(any two)*** 10×2=20

(a) What is signal transduction? Describe the different components of its pathways. 2+8=10

(b) What are lipids? Describe the reactive steps of synthesis of a triglyceride. 2+8=10

(c) Describe Krebs cycle. What is the fate of NADH produced in this cycle? 8+2=10

(d) Describe the synthesis and catabolism of starch. 5+5=10

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