2016

BOTANY

PAPER : BOT 203

ADVANCED PLANT PHISOLOGY AND BIOCHEMISTRY

Full Mark : 80

Time : 3 Hrs

Figures in the right hand margin indicate full marks for the question

1. Answer any nine from the following - $1 \times 9 = 9$

   a. The storage of the food mainly takes place in –

      i. Parenchyma cells

      ii. Medullary rays,

      iii. Xylem parenchyma cells

      iv. All of the above

   b. The function of ATP synthase is.

      i. Production of ATP by ADP + Pi

      ii. Production of ATP by ADP

      iii. Production of ATP by NADP

      iv. Production of ATP by NADPH

   c. The anti codon UAC of tRNA combines with the start codon AUG of mRNA which carries the amino acid?

      i. Methionine ii. Valine

iii. Alanine iv. Arginine

d. The function of DNA polymerases is

i. Proofreading ii. Splitting

iii. Denaturing iv. Sealing

e. In which wave length of light Pr converts to Pfr and Pfr converts to Pr?

i. 670 & 730nm ii. 550 & 670 nm

iii. 450 & 760nm iv. 350 & 790nm

f. In CAM photosynthesis.

i. All the below.

ii. The stomata in the leaves remain shut during the day.

iii. At night collect carbon dioxide.

iv. The CO_2 is stored as the four-carbon acid malate.

g. The differentiation of cultured callus tissue is initiated by :

i. Auxin ii. Gibberellins

iii. Cytokinin iv. Ethylene

h. Active transport

i. Requires a carrier protein

ii. Moves a molecule against its concentration gradient

iii. Requires a supply of energy

iv. All of these are correct

i. Which type of soil water is sufficient to absorb by the plants for their metabolic activities.

i. Capillary water

ii. Hygroscopic water

iii. Gravitational water

iv. Crystalline water

j. The Circadian rhythms is the

i. Metabolic processes with a regular periodicity of about 12 hours

ii. Metabolic processes with a regular periodicity of about 24 hours

iii. Metabolic processes with a regular periodicity of about 12 months

iv. Metabolic processes with a regular periodicity of about whole life.

2. Answer any five from the following - $2 \times 5 = 10$

a. What is ion channel? Write the types of ion channel.

b. Draw and describe the structure of a phospholipid molecule.

c. Define antiport and the symport through the membrane protein.

d. What is photorespiration?

e. What are isozymes? Give examples.

f. Describe the photoprotection in plants.

g. What are the directional translocations?

3. Write short notes on (any three) - $3 \times 3 = 9$

a. The fluid mosaic model of membrane structure

b. Aminoacyl tRNA synthetase

c. Vernalization

d. Phytochrome

4. Write on any four from the following- $4 \times 4 = 16$

a. What is enzyme kinetics? Describe the modes and models of enzymes action.

b. Describe the electron transport chain in mitochondria.

c. Write post translational modifications of protein.

d. Describe the nitrate assimilation in plants.

e. Elucidate the osmotic relationship of the plant cell.

f. Describe the mechanism of opening and closing of stomata..

5. Distinguish between (any three) from the following- $3 \times 4 = 12$

a. Structure of carbohydrates and lipids.

b. PS-I and PS-II.

c. The C3 and C4 plants.

d. Physiological effects of Gibberellin and Cytokinin.

e. The passive and active absorption in plant.

6. Write any two from the following- $2 \times 6 = 12$

a. Elucidate the Citric Acid Cycle in plant cell. 6

b. Describe the biosynthesis of auxin. Write the physiological effects of auxins $3 + 3 = 6$

c. What is critical day length of plants? Classify the plants according to photoperiodic reaction with appropriate examples. $2 + 4 = 6$

7. Write any one from the following : $1 \times 12 = 2$

What are amino acids? Classify the amino acids on the basis of structure. Describe the biosynthesis of amino acids in plant cell. 2+4+6=12

Or

Describe the protein synthesis in eukaryotic cell. 12

—— × ——