18BOU24

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023
(Sixth Semester)

Branch – **BOTANY**

PLANT METABOLISM

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 1 = 10)

1. Which of the following thermodynamic law gives the concept of enthalpy?
   (i) First law of thermodynamics (ii) Second law of thermodynamics
   (iii) Third law of thermodynamics (iv) Fourth law of thermodynamics
2. The nature of an enzyme is
   (i) Lipid (ii) vitamin (iii) carbohydrate (iv) protein
3. Photosynthesis occurs in
   (i) chloroplast (ii) golgi body (iii) endoplasmic reticulum (iv) nucleus
4. Where does the light reaction takes place?
   (i) grana (ii) stroma
   (iii) cytoplasm (iv) endoplasmic reticulum
5. H_2 donor during photosynthesis is
   (i) ATP (ii) NADP (iii) NADPH (iv) NADH
6. The first product of C_4 pathway is
   (i) PGA (ii) DHAP
   (iii) oxaloacetate (iv) phosphoenolpyruvate
7. Glycolysis is also known as _____
   (i) EMP pathway (ii) TCA pathway
   (iii) carbon sequestration (iv) None of the above
8. An important product of the Krebs cycle is
   (i) water (ii) methane (iii) ATP (iv) none of the above
9. Conversion of nitrogen to ammonia or nitrogenous compounds is termed as _____
   (i)nitrogen fixation (ii) nitrification
   (iii) denitrification (iv) nitrogen assimilation
10. Nitrate is reduced and ultimately produces N_2 through a series of intermediate gaseous nitrogen oxide products is called _____
    a) nitrogen fixation b) nitrification c) denitrification d) nitrogen assimilation

SECTION - B (35 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks **(5 x 7 = 35)**

11. a) State the law of thermodynamics.
    (OR)
    b) Determine the mechanism of enzyme action.

Cont....

12. a) Compare and contrast the phosphorescence and fluorescence.

(OR)

b) Discuss the role of photosynthetic pigments in photosynthesis.

13. a) Illustrate the steps of Calvin cycle.

(OR)

b) Assume the factors affecting in photosynthesis.

14. a) Organize the schematic representation of glycolyic pathway.

(OR)

b) Discuss the structure, types and significance of ATP.

15. a) Elucidate the pathway of β- oxidation of fatty acids.

(OR)

b) Show the mechanism for the synthesis of aminoacids.

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks **(3 x 10 = 30)**

16. Classify the enzymes by IUB system.
17. Construct the mechanism of light reaction.
18. Differenciate the C_3 and C_4 plants
19. Critically analyse the Kreb's cycle. Mention its significance.
20. Evaluate the sources and nitrogen fixation in root nodules in leguminous plants.

Z-Z-Z END