

THE OPEN UNIVERSITY OF SRI LANKA

B.Sc./B.Ed. DEGREE PROGRAMME – 2007/2008

BOTANY – LEVEL 04

BTU 2201/BTE 4201 – PLANT PHYSIOLOGY

ASSESSMENT TEST II – (NO BOOK TEST)

DURATION : ONE (01) HOUR



Registration No.

DATE : 22nd March 2008

TIME: 3.00 p.m. – 4.00 p.m.

PART – I

Answer **ALL** questions in the space provided.

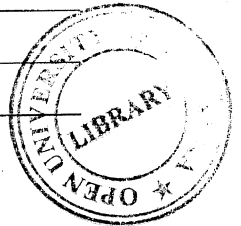
01. Fill in the blanks with the most appropriate word/words.

- a. The mechanism of enzyme action is thought to be by lowering the _____ of a reaction by forming _____ complexes.
- b. The region of the enzyme that comes into contact with the substrate is called the _____ of the enzyme.
- c. Almost all enzymes are proteins except for a small group of catalytic RNA molecules known as _____.
- d. An enzyme together with its coenzyme and /or metal ions is called a _____.
- e. Collapse of the protein structure caused by an increase in temperature or any other factor is called _____.
- f. Competitive inhibitors compete with the _____ for active sites on the surface of the enzyme.

- g. Enzymes that catalyze the addition of water molecules to a particular substrate are known as _____.
- h. The synthesis of ATP from the transport of electrons excited by light energy down an electron transport chain is called _____.
- i. In C_4 plants, the CO_2 acceptor is a 3C compound known as _____.
- j. Oxidation of a molecule of glucose in aerobic respiration results in the net gain of _____ ATP molecules.
- k. Fermentation is the process carried out by many organisms under _____ conditions.
- l. Starch consists of two major chemical components, a straight chain glucose polymer _____ and a branched chain polymer _____.
- m. Oxygen in photosynthesis is evolved from splitting of _____.
- n. Light travels in discrete energy packets called _____.
- o. The symbiotic association of *Rhizobium* with plant roots of legumes occurs in the multi-cellular structure called _____.
- p. The conversion of molecular nitrogen into other forms such as ammonia or nitrate is known as _____.
- q. The largest reservoir of nitrogen on earth is _____.
- r. The enzymes of glycolysis are located in the _____.

02. a. What is the significance of photosynthesis in nature?

b. What is meant by "dark reactions" of Photosynthesis?



c. Where does it take place in the cell?

d. What is its relationship to the "light reactions"?

- e. Briefly outline the CO_2 fixation process in C_4 plants.

- f. What are the main anatomical differences between the leaves of C_3 and C_4 plants?

PART - II

Registration No.....

Multiple choice questions.

Underline the most appropriate answer.

01. When an organism is temporarily deprived of O_2 , it obtains its energy from
 - a) the Krebs cycle
 - b) glycolysis and fermentation
 - c) the oxidation of pyruvic acid to acetyl CoA.
 - d) the respiratory electron transport chain.
02. Nitrogen fixation by organisms require conditions that are
 - a) highly alkaline
 - b) anaerobic
 - c) saturated with sunlight
 - d) acidic
03. An allosteric site on an enzyme is
 - a) the same as the active site
 - b) where ATP attaches and gives up its energy
 - c) often involved in feedback inhibition
 - d) all of these are correct
4. The function of the mitochondrial cristae is to
 - a) prevent escape of oxygen gas
 - b) store co-enzyme A
 - c) increase the surface area of the inner membrane
 - d) increase the availability of phospholipids
5. Which one of the following is not true of glycolysis?
 - a) Substrate-level phosphorylation takes place
 - b) The end products are carbon dioxide and water
 - c) ATP is formed
 - d) ATP is used
6. Nitrogen fixation by bacteria requires the enzyme
 - a) decarboxylase
 - b) nitrogenase
 - c) nitrogen deaminase
 - d) nitrodioxidase

7. Which of the following processes make direct use of oxygen?
 - a) Glycolysis
 - b) Fermentation
 - c) Krebs cycle
 - d) Electron transport system
8. The final acceptor of electrons during the noncyclic electron pathway is
 - a) PS I
 - b) PS II
 - c) ATP
 - d) NADP
9. CAM photosynthesis
 - a) is same as C₄ photosynthesis
 - b) is an adaptation to cold environments
 - c) is prevalent in desert plants that close their stomata during the day.
 - d) is seen in tropical grasses like maize, sorghum etc.
10. Excited chlorophyll molecules are excellent reducing agents in that they
 - a) readily accept the electrons of sunlight
 - b) breakdown easily into smaller molecules
 - c) easily give up their electrons to other molecules
 - d) split water into H and O atoms.