

TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
EXAMINATION FOR FRESHMEN (FOURTH YEAR) STUDENTS OF CHEM /BOTANY			
COURSE TITLE:	PHYSIOLOGY OF ALGAE		COURSE CODE: BO4123
DATE: 22 JANUARY, 2015	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS



I - Choose the correct answer:-

(20 Marks)

- 1- The pigment in the red algae which helps to absorb blue-green region of the spectrum reaching the greatest depth in water.....
 a) Phycoerythrin b) Phycochloroin c) Phycocyanin d) None
- 2 – Fucosterol and cholesterol reserve food found in.....
 a) Cyanophyta b) Rhodophyta c) Phaeophyta and Chlorophyta d) a+b
- 3-The phycobilins pigments are found in the spaces between the thylakoids in.....
 a) Cyanophyta b) Cryptophyta c) Phaeophyta d) b+c
- 4- Element used to remove diatom from cultures during isolation.....
 a) Sodium b) boron c) Germanium d) silicon
- 5- Element required for nitrogen assimilation, in photosynthesis and for the synthesis of cytochromes.....
 a) molybdenum b) copper c) iron d) nitrogen
- 6- The process of nitrogen fixation independent on.....
 a) salinity b) light c) temperature d) a+c
- 7- Which of the following algal divisions is characterized by possession of chlorophylls a, b, and starch as the energy storage material.....
 a) Chrysophyta b) Chlorophyta c) Phaeophyta d) a+b
- 8- This is a form of nutrition where light is required to use organic carbon sources for growth. It is relatively rare in the algae.....
 a) mixotrophy b) photolithotrophy c) photoheterotrophy d) heterotrophy
- 9- The length of exponential phase in cultures depends upon.....
 a) size of inoculum b) volume of the medium c) culture conditions d) all previous
- 10-The major components of the photosynthetic light-harvesting system of the cyanobacteria are.....
 a) chlorophyll a b) chlorophyll b c) phycobilins d) a+c

II- Put sign (√) front the correct answer and sign (X) front the rong answer

and correct the wrong answer:-

(20 marks)

- 1 - Heterocystous cyanobacteria lack photosystem I so that there is no photosynthetic evolution of oxygen ().
- 2 - In Chlorophyceae and phaeophyceae chloroplasts are enveloped by two parallel membranes ().
- 3- The chloroplast is a discrete cell organelle which represents in the photosynthetic apparatus of eukaryotic cells ().
- 4- Most algal species grow best on salinity higher than that of their native habitat ().
- 5- The inflow rate of fresh medium introduced into the chemostat culture is fixed ().
- 6- Magnesium play a role in potassium and sodium uptake ().
- 7- The length of lag phase varies inversely with inoculum size ().
- 8-during medium preparation potassium and iron must sterilize separately ().
- 9- The optimal temperature for phytoplankton cultures is generally between 30 and 45°C ().

10- The small forms algae such as *chlorella* grow much less than large one ().

III-Complete the following:-

(20 marks)

- 1- The enzymecatalyze the reversible hydration of CO₂.
- 2- Phycobilisomes are.....
- 3- The pathway of autotrophic CO₂ fixation in algae is.....or.....
- 4- A culture has three distinct components.....and.....
- 5- The most important parameters regulating algal growth are.....,..... and.....
- 6- Cultures enterphase when net growth is zero, and cells may undergo dramatic biochemical changes.
- 7- Culture vessels should have some properties like.....,.....,.....and.....
- 8- Photorespiration defined as.....
- 9- Turbidostat culture is.....
- 10- Chlorophyll d present in.....while chlorophyll e present in.....

IV- Write short note about the following:-

(20 Marks)

- 1- Function of Carotenoids in photosynthesis.
- 2- Acetylene reduction.
- 3- Vitamins requirements by algae.
- 4- Death phase.
- 5- Aeration/mixing of the algal culture.
- 6- Semicontinuous culture.
- 7- Reduction of the light intensity by self-shading.
- 8- Nitrogenase enzyme.
- 9- Light as important parameter for algal growth.
- 10- Thylakoids of green algae.

V- Explain the differences between the following:-

(20 Marks)

- 1- Advantages and disadvantages of both batch and continuous cultures.
- 2- Temporal and spatial separation In non heterocystous nitrogen fixing cyanophyta.
- 3- The artificial and enrichment medium.
- 4- Heterotrophy and Phagotrophy.
- 5- Acetate-utilizing and sugar-utilizing algae.


With my best wishes ,,,,,,

Dr. Rania El-Shenoudi

EXAMINER COMMITTEE

DR. Rania El-Shenoudi

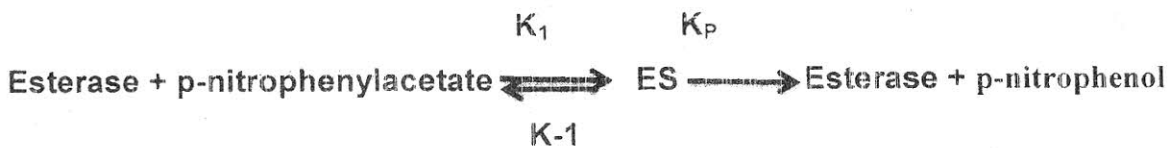
Prof. Dr. Atef Mohamed Abo-Shady

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF BIOCHEMISTRY			
COURSE TITLE:	Enzymes and Genetic Engineering		COURSE CODE: 14062	
DATE: 12-1-2012	JANUARY, 2013	TERM: FIRST	TOTAL ASSESSMENT MARKS: 60	TIME ALLOWED: 3 HOURS

Section (A) Enzymes: (20 marks).

Answer all the following questions:

Esterase with Mr 60, 000 catalyze the hydrolyze p-nitrophenyl acetate to p-nitrophenol and acetate.



Where $K_1 = 1 \times 10^7 \text{ M}^{-1} \cdot \text{sec}^{-1}$, $K_{-1} = 1 \times 10^5 \text{ sec}^{-1}$ and $K_p = 3 \times 10^5 \text{ sec}^{-1}$

- a- Calculate K_m in mM, and Turn over number **(3 Marks)**
- b- Calculate enzyme concentration in mg if the V_{max} of enzyme is 6 mmol/sec **(3 Marks)**
- c- Detect the type of inhibitor If we add 10 mM PCMB the k_m will increase with no change in V_{max} **(1 Marks)**
- d- Compare between Random and ordered single displacement reaction **(3 Marks)**
- e- Compare between classical and nonclassical competitive inhibitor and write the general properties of competitive inhibitor **(2 Marks)**
- f- Apply the K_m of enzyme in treatment of Leukemia **(2 Marks)**
- g- How determine activation energy **(3 Marks)**
- h- Write 5 applications of enzymes **(3 Marks)**

أطيب التمنيات بالنجاح و التوفيق

