	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) Phycochlorein 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 ( ).

من فضلك أنظر خلف الصفحة

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

III-Complete the following:- (*20 marks*)

1- The enzyme ..... catalyze the reversible hydration of CO_2.
2- Phycobilisomes are.....
3- The pathway of autotrophic CO_2 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 enter .....phase 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 c 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-Semicontinous 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 COMMITE	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 pnitrophenyl acetate to p-nitrophenol and acetate.

$$\text{Esterase + p-nitrophenylacetate} \underset{K\text{-}1}{\overset{K_1}{\rightleftharpoons}} \text{ES} \xrightarrow{K_P} \text{Esterase + p-nitrophenol}$$

Where K_1 = $1x10^7$ $M^{-1}.sec^{-1}$, K_{-1} $1x\ 10^5$ sec^{-1} and K_p $3\ x\ 10^5$ 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 km 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 thegeneral properties of competitive inhibitor **(2 Marks)**

f- Apply the Km 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

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT CHEMISTRY – BIOCHEMISTRY SECTION			
	EXAMINATION FOR SENIORS (4TH YEAR) STUDENTS OF BIOCHEMISTRY			
	COURSE TITLE:	Genetic Engineering – Enzymology		COURSE CODE: 14062
DATE:	JANUARY, 2013	TERM: FIRST	TOTAL ASSESSMENT MARKS: 40	TIMELLOWED: 3 HOURS

ANSWER ALL THE FOLLOWING QUESTIONS

I) A-How can Recombinant insulin, growth hormones be produced ? (5 degrees)

B- What is meant by gene therapy, giving example?(3 degrees)

C- What is the semiconservative replication of DNA? (2 degrees)

II) A- What is the structural forms of DNA and their advantages? (4 degrees)

B- How Eukaryotic DNA be organized ? (3 degrees)
C- What is S1 nuclease and its characters? (3 degrees)

III) A- Describe the mechanism of PCR, giving examples for its applications? (5 degrees)
B- How can occur gene cloning in agriculture, giving one example?(5 degrees)

IV) write the names of the different methods used in transgenic animals, explain their disadvantages if present, illustrating with one example? (10 degrees)

أطيب التمنيات بالنجاح و التوفيق

ا.د/ أفراح فتحي سلامه

ملحوظة هامـــــــــــــــــــه: أسئلة المادة الثانية في الخـــــــــــــــــــلف

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY		
	FINAL EXAMINATION (JAN. 2015) FOR THE FOURTH YEAR BOTANY/ CHEMISTRY STUDENTS		
	COURSETITLE	MUTATIONS GENOME CHANGE	COURSE CODE: BO4131
DATE:	JANUARY19, 2015	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Please note that the exam is prepared in 2 pages

Answer the following questions:

I. **Environmental factors such as radiations, oxidative stress or exposure to toxins can cause some genetic changes by altering the nucleotides sequence of DNA. These changes in DNA induce gene mutations which can produce some dramatic changes in genome leading to either develop some diseases or death. In the light of the previous words.**

Answer the following: (30 Marks/30 mins)

1. Identify the transition and transversion mutations. (5 Marks)
2. What is the alkylation damage of DNA? (5 Marks)
3. Explain how the environmental alkylating agents affect DNA. Illustrate your answer with two clear examples. (10 Marks)
4. Discus how reactive oxygen species (ROS) produced from ionizing radiation and oxidative stress damage DNA. (10 Marks)

II. **choose the correct answer** (20 Marks/15 mins)

1- The start codon of the transcription process is .....
   a) GUA b) AUG c) AGU
2- Human genome contains ..... Mb
   b) 3000 b) 300 c) 30000
3- UV light promotes the formation of cyclobutane pyrimidine dimer by introducing ..... new bonds between adjacent pyrimidine.
   a) Three b) Two c) One
4- DNA replication is ..... process.
   b) Conservative b) Dispersive c) Semi-Conservative
5- The polymerization rate (nucleotide/second) for DNA polymerase II is .....
   c) 16-20 b) 40 c) 250-1000
6- The replisome consists of ..... different proteins.
   a) 20 b) 30 c) 25

7- The crucial component in the initiation process of DNA replication is the .....protein.

a) DnaB b) DnaA c) DnaC

8- The double helix is approximately measures .....nm in diameter.

a) 2 b) 4 c) 6

.9- DNA ligases can ..... nucleic acid molecules.

a) join b) break c) both A and B

10- The primase is required for ..... DNA replication.

a) *in vivo* b) *in vitro* c) both A and B

III. **Write short notes on the following** (20 Marks/20 min)

1- Gene mutations. (10 Marks)

2- The requirements for DNA replication. (10 Marks)

IV. **If a DNA strand in *E. coli* lost phosphodiester bond during DNA replication, leaving a free 3 hydroxyl and a free 5 phosphate (nick formation).** (30 Marks/30 mins)

Please answer the following:

1- What are the enzymes required to fix this problem? (5 Marks)

2- What is the name of this process? Explain with labeled diagram how it moves across the DNA strand. (10 Marks)

3- DNA replication process is considered one of the DNA mutation sources, explain why and discus how could be these mutations removed? (10 Marks)

4- What are the different stages for DNA replication? Explain with labeled diagram the initiation process. (5 Marks)

With all our best wishes

Examiner committee: *Prof. Dr. Reda Gaffar* *Dr. Mohamed Elhiti*

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	FINAL EXAMINATION for level 4 (Chemistry-Geology) Students			
	COURSE TITLE:	Geochemistry		COURSE CODE: 4105
DATE:	JAN., 2015		TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions: (Part I) *(50 marks)*

1- Compare between the following pairs: *(18 marks)*

A-LILE and HFSE.

B-Partition coefficient and ionic optional.

C- Clark and Clark concentration.

D- Element camouflage and element capture.

2- Deduce the significant of the following in geochemistry: *(18 marks)*

A- Rare Earth Elements.

B- Radioactive elements.

C- Chandorites.

D- Light REE.

3- Say Why? *(14 marks)*

A- Forsterite proceeds Fayalite during magmatic crystallization.

B- Despite of Li has an ionic radius similar to that of Mg and Fe^{2+}, it cannot COMPATIBLE with Olivine crystal lattice.

C- A negative Eu anomaly is typical of many continental rocks, as well as most sediments and seawater.

D- If KD is more than one then the con. of the element will decreases with crystallization

Answer the following questions: (Part II) *(50 marks)*

1- Write briefly on the following: *(25marks)*

1- Define the Magma type based on Al_2O_3 saturation

2- Explain Goldschmidt rule for major elements and factors affect the distribution during magmatic crystallization

3- Discuss the geochemical aspects of crystallization of magmas as reveal by reaction series.

4- Compare between the geochemical characteristics of A-type and M-type granites and their tectonic setting.

5- Discuss Siderophile elements and their distribution in the earth.

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2-Complete the followings: *(12.5 marks)*

1-Geochemical classification of the elements based on ....., ..., ... and classified into ....., ..., ...

2- Meteorites are classified into ....., ..., ... and similar to ....., ..., ... respectively.

3- Normative composition of S-type granites should include .....,.and..... and formed in .....setting due to ..... and have ..... magma type.

4- Volcanic arc granites have a ..... magma type and originated in ..... tectonic setting

5- Uranium - thorium mineralization occurs in ..... rocks as..... contains high amount of ....., ..., ...elements.

3-Put √ or × marks and correct the wrong ones:- *(12.5 marks)*

1- Rhyolite in Cox et al. (1979) volcanic rock classification characterize by low SiO_2 and $Na_2O+ K_2O$

2- The mantle are mainly formed from lithophile elements whereas the crust are mainly formed from chalcophile elements such as Ca and Li

3- Oceanic granite is A- type granites, mainly alkali feldspar granites, contains garnet and formed in island arc setting.

4- Chlorine, fluorine and water decreased in the early stage of crystallization

5- The uranium- thorium mineralization are found in mafic rocks e.g gabbros

Examiners:

Prof. Mohamed F Ghoneim	*Prof Mohamed M Abu Anbar*
Prof Bothina Taha ElDesouky	*Prof Mohamed AbdelRahman Hamdy*

Good Luck

Zoology Department
Faculty of Science
Tanta University

Physiology 2 Exam (CH/ZO) — *Level 4 First Semester*
Course Code: Z04143 — *Date: Januar 18, 2015*
Students Number: 85 — *Time allowed: 2 hours; Total Mark:100*
Examiners: Prof. Mohammed Abdel-Moneim Hegazi, Prof. Mohamed Abol-Fotouh Basyony,

Part 1 (50 points)

Give an account on:

a) Buffering system of blood.
b) Filtration in Bowman's capsule.

Part 2 (50 points)

A) : Select only one, which is more correct answer in the following:

1. Hemoglobin that carry CO_2 is named :
   a. OxyHB b. CarboxyHB c. CarbaminoHB d. Met.HB
2. Antibodies are formed by:
   a. Monocyte b. T helper cellc. cytotoxic cell d. B cell
3. Platelets are directly produced in bone marrow from :
   a. Megakaryoblast b. Megakaryocyte c. normoblast d. Plasma cell
4. CFU cells (resemble lymphocytes in appearance) is :
   a. self-replinish b. progenitor c. precursor d. mature cells
5. Which of the following is not a secretion of basophile:
   a. serotonin b. heparin c. histamin d. histaminase
6. CFU_G will develop to :
   a. RBCs b. Platelets c. neutrophils d. lymphocytes
7. Hemorrhage may results from deficiency of factors of:
   a. procoagulant b. anticoagulant c. fibrinolysis
8. Normoblast will develop (give rise to) :
   a. Erythrocyte b. monocyte c. T cells d. NK
9. Hypersensitivity and inflammatory reactions due to increase of :
   a. basophile b . neutrophile c. eosinophile d. T lymphocyte
10. Which of the following is not anti-coagulation factors :
    a. PG I2 b. protein C c . protein S d. Thromboplastin
11. Dissolvement of the clott is obtained by:
    a. urokinase b. ATIII c. heparin d. warfarin
12. vWF. Is essential for stabllization of factor:
    a. I V b. V c.VIII d. XII e. XIII
13. High decrease of hematocrite value indicate:
    a. polycythemia b. anemia c. pancytopenia d. erythrocytosis
14. Plasma cells developed from :
    a. T cells b. B cells c. NK d. monocytes
15. The platelets receptor for adhering is :
    a. GP Ib b. GP IIbIIIa c. GP IIb d. GP IIIa

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16. Coagulation is constricted (مقتصر)to the area of damage by means of :
    a.Platelets b. ATIII c. fac. XIII d. fibrinolytic mechanism
17. Which of the following is not important for fibrinolysis?
    a. Plasmin b. t-PA c. Fibrinogen d. Urokinase
18. Hemoglobin form that cannot longer interact with O2 is:
    a. HbA b- HbA2 c- HbF d- HbM
19. Disorder of which of the following organs will cause thrombocytopenia :
    a. liver b. spleen c. bone marrow d.all is true
20. Macrophages developed from:
    a. T cells b. B cells c. NK d. monocytes

B) :Put (√) true or (X) false for the following statements and correct only the false, when you found it:

1. In adults, Hb F release more O_2 to tissue than Hb A.
2. RBCs are devidable cells.
3. The uncongugated bilirubin is converted in large intestine to urobilinogen.
4. Interferon is secreated by Monocytes.
5. Monocytes recirculate continually from blood to interstitial fluid.
6. Neutrophiles are antigen presenting leucocytes.
7. Neutrophils and macrophages are phagocytic cells found normally in blood stream.
8. Esinophil mediate allergy, while basophile moderate it.
9. Fibrinogen is essential for platelets adhering.
10. Both PG A2 and PG I2 are powerful procoagulants.
11. A hemophilic son may be born to a hemophilic father because of hereditary.
12. The factor (t-PA) is antiprocoagulant.
13. In adults, formed elements as well as plasma protein are produced by red bone marrow.
14. RBC precursor cells are a nucleated.
15. Globulin is the protein from which antibodies is formed.
16. The main albumin function is to make the osmotic pressure of the blood.
17. all agranulated leucocytes are developed from lymphoid stem cells.
18. Bleeding is a feature of antithrombin difficiency.
19. vWF level in Plasma is always affected by hepatic disorder.
20. Splenomegaly cause thrombocytopenia, splenoctomy cause thrombocytosis.

C) Give the scientific name, definition or description for each of the following:

1. The pro-coagulant factor, that is activated by both intrinsic and extrinsic pathways.
   It is .....
2. A factor activated by thrombomodulin-thrombin complex and inhibit both factor V and factor VIII.
   It is .....
3. The factor that activate anti-thrombin III action .
   It is .....

4. An element help liver to synthesize coagulant factors no. II , VII, IX and X in addition to protein C and protein S.
   It is .....
5. The coagulation factor that initiate the extrinsic pathway and activate factor VII
   It is .....
6. The enzyme found in platelets tubule, convert arachodinic acid into thromboxan A2
   It is .....
7. Potent procoagulant factor that multiply other coagulation factors and split fibrinogen into fibrin.
   It is .....
8. The substance that degrades fibrin strands.
   It is .....
9. Factor that stabilize the formed clot.
   It is .....
10. The type of prostaglandin that prevent the intact blood vessel from developing intravascular thrombi.
    It is .....

Best wishes from
The Examiners

1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY			
	FOURTH YEAR (CHEMISTRY \ MICROBIOLOGY) FINAL EXAM.			
	COURSE TITLE:	Yeast biology		COURSE CODE: MB 4101
DATE: 21/1/	January. 2015	TOTAL ASSESSMENT MARKS: 100	TERM: FIRST	Time allowed: 2 hours

Answer the following questions with drawing if possible:-

I- Discuss briefly <u>three only</u> from the following: 30 Mark

1- The life cycle of *Filobasidiella neoformans*.
2- Classification of the anamorphic yeasts.
3- Haplobiontic type life- cycle of yeast.
4- New trends in yeasts identification.

II- Choose one answer: **10 marks**

1- *Candida* is an imperfect yeast causes:
a. Cryptococcosis b. Candidiasis c. Tinea d. Non of the above

2- The pheromones of the Tremellales have been named:
a. Tremerogens- b. α-pheromone- c. A-pheromone- d. a-pheromone

3- The Yeasts from growing point of view are better to be growing in:
a. Batch culture form b. Continuous culture c. Solid media form d. All of them

4- DNA/DNA hybridization data are being used:
a. To show phylogenetic relationships in both the imperfect genera and species.
b. To confirm the yeast identification at species level with reference species.
c. To determine the similarities between two yeast species.
d. All of the above

5- The following are pheromones effects :
a. Cell cycle arrest and cell volume changes. b. Budding ratio and growth inhibition. c. Agglutination and gene induction. d. All of the above

<u>See next page</u>

III- Discuss briefly the Yeasts growing cultures types. 30 mark

IV- Complete the following: 20 mark

1- Ballistoconidia is .....
2- Pheromones are.....
3- DNA/DNA hybridization data generally refers to.....
4-Clamp connection is .....
5-*Saccharomyces* is characterized by.....

V- Mark true or false 10 marks

1- Colony color, shape, and texture is descriptive features for yeast Colony Shape.
True False

2- Diplobiontic type life cycle of yeast have one type of thallus
True False

3- Yeast plays a part in the dynamics of the biological and chemical turnover in soil, plant, animal and water
True False

4- phyllosphere or phylloplane is the internal surface of the leaf containing microorganisms.
True False

5- Imperfect yeast contains Basidiospores or ascospores.
True False

Best wishes
Prof. Dr. Alaa Mostafa Abou-Zeid
Prof. Dr. Ahmed sharaf El-deen

Zoology Department
Faculty of Science
Tanta University

Animal Techniques Exam — ***Level:*** *4, Chemistry./Zoology, First Semester*
Course Code: *ZO4153* — ***Date:*** *January 21, 2015*
Students Number: *85* — ***Time allowed:*** *2 hours;* ***Total mark:*** *100*
Examiners: *Prof. Dr. Ehab Touson, Prof. Dr. Randa El-Nagar, Dr. Mohamed Nassef Mohamed Nassef and Dr. Lamiaa Bakr*

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QUESTION 1 (25 marks)

Answer the followings

1. Why to study microtechniques?
2. What is Fixation, the aim of fixation and the qualities of a good fixative?
3. Immunohistochemistry and its applications.
4. Identify; monoclonal and polyclonal antibodies.
5. Indirect method for IHC.

QUESTION 2 (25 marks)

A) Fill in the spaces:

1. B-Cells grow and mature in ..... while T-Cells grow and mature in .....
2. Detection of blood groups is based upon.....test, while detection of pregnancy is done by ..... test.

B)- Give the scientific term:

3. Non specific and born with the individual.
4. The transfer of a specific antibody from an immunized individual to a non-immunized one.

C)- Rewrite the following sentences and correct the wrong one if present:

5. Memory is a property shared with the nervous system.
6. Spleen is considered as a primary immune organ.

QUESTION 3 (25 marks)

A- Fill in with appropriate word(s)? (20 mark)

1) In hybridoma technique, adding of.....leading to fusion of normal .....with.....cells to produce hybridoma cells.
2) Secondary cell cultures classified into: 1-.....2-.....
3) In PCR technique, DNA is synthesized in the same manner as that seen *in vivo* using....., the enzymes that cells use to replicate their DNA.
4) A sample which contains fragments of DNA is forced by an.....current through a firm.....which is really a sieve with small holes of a fixed size
5) Polyclonal antibodies derived from multiple cell clones and bind to multiple .....of antigens used in the immunization technique.
6) Genetic fingerprinting is a forensic technique used to identify a person or organism by comparing.....through different PCR-based methods

B- Write briefly on only one of the followings? (5 mark)

1)-Applications of Cell culture technique.
2)-Basic principles of PCR technique.

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QUESTION 4 (25 marks)

A- Give a reason for the following:

1- In leishman staining for blood smear methanol doesn't use as a fixative.
2- Vital stain for protozoa is usually preferred.
3- We make staining directly after washing from formalin fixative without hydration step.

B- Complete the following:

1- In protozoa we use .....to stain flagella, cilia and nuclei.
2- ..... Step use to prevent autolysis and preserve specimen as normal as possible.
3- We preferred .....to detect protozoan and metazoan parasites.
4- We use clearing step to .....
5- Thin blood smears indicate .....
6- .....used for relaxation of nematodes.

C- Illustrates in notes the following:

1- Advantage and disadvantage of direct fecal smear.
2- The wet mount technique.
3- How to make thick blood smear.

Best wishes from
The Examiners

فسيولوجيا الطحالب — رابعة كيمياء

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) Phycochlorein 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 ( ).

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

III-Complete the following:- (*20 marks*)

1- The enzyme ..... catalyze the reversible hydration of CO_2.
2- Phycobilisomes are.....
3- The pathway of autotrophic CO_2 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 enter .....phase 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 c 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-Semicontinous 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 COMMITE	DR. Rania El-Shenoudi	Prof. Dr. Atef Mohamed Abo-Shady

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR FOURTH YEAR STUDENTS OF CHEMISTRY-ENTOMOLOGY			
1969	COURSE TITLE:	Insect Physiology		COURSE CODE: EN 4141
DATE:21/1	JAN,2015	FIRST TERM	TOTAL ASSESSMENT MARKS:100	TIME ALLOWED: 2 HOURS

(يتكون الامتحان من صفحتين)

Part I (Total: 30 marks)

Write short notes on the following (30 marks: 6 each)

1- Digestion and absorption of the protein and lipid of insects.
2- Types of disaccharide enzymes of insects.
3- Factors affecting on the enzyme activity of insects.
4- Mechanism of excretion of uric acid through Malpighian tubule.
5- Calculate the A.D. for carbohydrate, protein and fat for insect, if it consumed 5, 4, 2 gr and extremes 3,2,0.8 gr carbohydrate, protein, and fat respectively.

Part II : (Total: 30 marks)

Write brief notes on

1- Types of neurons. (10 marks)
2- Functions of glial cells. (10 marks)
3- Signal transmission. (5 Marks)
4- Neuromodulators. (5 marks)

Part III (Total: 40 marks)

1. **Complete the following statements with the appropriate words: (Total: 5 Marks)**
   a. The cells producing neurohormones are called.....
   b. Polyphenism refers to.....
   c. The haemolymph of insects consists of.....

2. **Indicate whether the following statements are true or false : (Total: 5 Marks)**
   a. The corpora cardiac only contain the axons from the neurosecretory cells of the brain. ( )
   b. The main functions of insect's circulatory system are transport and protection. ( )
   c. The neurosecretory cells in each abdominal segment in *Carausis* are monopolar cells. ( )
   d. Each corpus cardiacum is connected to the protocerebrum by a pair of nerves and to the hypocerebral ganglion by a single nerve. ( )
   e. The number of circulating cells increases before a moult and decreases again after it. ( )

3. **Give an account on: (Total: 20 Marks)**
   a. The juvenile hormone binding proteins in plasma
   b. Control of diapuase in *Bombyx mori*.
   c. Polyphenism in aphids
   d. The course of insect circulation

4.Choose the correct answers of the following (Total: 10 Marks).

1- The JH level in the larvae of honey bee which destined to become queens is **(lower than- higher than- equal)** that of larvae to become workers.
2- The corpora cardiaca store and release hormones from the neurosecretory cells of **(SOG- brain- prothoracic gland).**
3- At the time when the ecdysteroid titer approaching its peak and insect's cuticle apolysis occurs is called **(final – beginning – preparatory)** phase.
4- Growth and molting are governed by two classes of hormones; JH and **(ecdysteroids- bursicon- octopamine).**
5- The period for which the brain hormone is necessary for initiation of molting is known as **(optimum- long-critical)** period.
6- The neuroendocrine structures of insects are specialized **(cells - cells and glands – glands).**
7- The source of JH in honey bee which controls the differentiation of oocytes is **(corpora allata- corpora cardiaca- SOG).**
8- In nearly all insects, the prothoracic glands **(enlarge- break down- appear)** after the final molt to adult.
9- Honey bees have two important glands producing pheromones **(mandibular and Nassanoff- mandibular and Pavan- mandibular and Dufour)** glands.
10- Neurosecretory cells are specialized neurons resemble **(monopolar- multipolar- bipolar)** nerve cell but showing cytological evidence of secretion.

Good Luck!

EXAMINERS	DR. AMAL IBRAHIM SEIF	DR. ELSAAID NAEEM
	DR. HALA ABDEL-AZEEM	DR. MERVAT ABOU SEADA

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR LEVEL FOUR STUDENTS (SEMESTER 1) OF CHEMISTRY/BIOCHEMISTRY, BOTANY, MICROBIOLOGY, ZOOLOGY, OR GEOLOGY			
	Course Title:	BIOINORGANIC CHEMISTRY		Course Code: CH4159
DATE	29.12.2014	TERM: First	Total assessment marks: 50	Time Allowed: 2 HOUR

I- Discuss each of the following: (20 marks)

1- Absorption and transport of Iron.
2- Role of parathyroid hormone (PTH) in Calcium regulation.
3- Disorders of Potassium.
4- Mechanisms by which heavy metals induce toxicity.
5- Cytotoxic activity of *cis*-diamminedichloroplatinum (II) (Cisplatin).

II- Determine the biological function of each of the following elements: (10 marks)

1- Copper 2-Iodine 3-Phosphorus 4-Sodium 5-Sulpher

III- Complete each of the following: (10 marks)

1- Aldosterone ---------- Plasma magnesium level.
2- ---------- refers to a decrease in plasma potassium level below ----------
3- ---------- is characterized by sudden and severe exposure to toxic metal(s).
4- The ---------- protein binds to 1, 2-intrastrand cisplatin–DNA adducts and leads to ----------.
5- ---------- are a relatively new class of organometallic anticancer agents.
6- Hypernatremia may be due to ----------, ----------, or ----------
7- Calcitonin inhibits ---------- where PTH ---------- in bone
8- Rescued cisplatin in the bloodstream crosses the cell membranes either by -------- or ----------
9- Cisplatin is converted to the active form by ---------- in which ----------
10- DNA adducts are mainly removed by ----------

IV- Choose the correct answer: (10 marks)

1- Ferritin and hemosiderin are
a- Storage forms of iron.
b- Other forms of hemoglobin.
c- The iron-protein carriers in the blood.
d- Types of red blood cells.

2- Iodine deficiency may lead to development of:
a- Rickets. b- Goiter.
c- Scurvy. d- Shingles.

3- Mechanisms of lead (Pb) toxicity include

a- Displacement of magnesium and iron from certain enzymes involved in biosynthesis of nucleotides.
b- Disruption of the activity of zinc involved in the synthesis of heme.
c- Disruption of calcium metabolism.
d- All of the above.

4- The paramagnetic contrast agent employed in brain tumor imaging is

a- Vanadocene dichloride 2.
b- Gadolinium-diethylene triamine penta-acetic acid (Gd-DTPA).
c- Carboplatin.
d- Technetium-99m (Tc-99m) pertechnetate.

5- The cytotoxic effect of Titanocene dichloride 1 involves

a- Phosphate (O) coordination only.
b- N(7) coordination only.
c- N(7) and phosphate (O) coordination.
d- Variety of protein targets.

6- Titany can result from

a- Hypomagnesemia.
b- Renal tubular alkalosis.
c- Vit. C deficiency.
d- Hypocalcemia.

7- In which of these compartments is Na^+ concentration the lowest?

a- Interstitial fluid.
b- Plasma.
c- Intracellular fluid.
d- Lymph.

8- All of these factors help to cause ADH secretion EXCEPT

a- Ingesting more water than is needed to balance water loss.
b- Stimulation of hypothalamic osmoreceptors.
c- Dehydration.
d- Increased ECF osmotic pressure.

9- This hormone directly increases water reabsorption in the kidneys.

a- Aldosterone.
b- Atrial natriuretic hormone.
c- Antidiuretic hormone.
d- Parathyroid hormone.

10- To avoid heavy metal toxicity individuals have to

a- Avoid eating organic food.
b- Increase intake of sea food.
c- Get used to smoking.
d- None of the above.

Best wishes
Dr. Thoria A. Aziz
Dr. Rasha Hammad

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ك - حشرات

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR EQUITABLE PROGRAM (SEMESTER 2) OF BIOCHEMISTRY			
1969	Course Title:	NUCLEIC ACIDS METABOLISM		Course Code: BC3105
DATE	08.01.2015	TERM: SECOND	Total assessment marks: 50	Time Allowed: 2 HOUR

I. Answer the following questions: (18 marks)

1. Indicate which reactions of purine or pyrimidine metabolism are affected by the inhibitors (a) allopurinol, (b) 5-fluorouracil, and (c) methotrexate
2. How do DNA gyrases and helicases differ in their respective functions and modes of action?
3. How does DNA polymerase III copy the parent strand that runs in the 5' to 3' direction at the replication fork?
4. How are the ends of chromosome (telomeres) replicated?
5. In *E.coli*, incorporation of an incorrect base is repaired after completion of DNA synthesis. How do these prokaryotes discriminate between the original non-mutated and the newly synthesized strand?
6. Using an illustrative diagram, show how a Holliday junction is formed between two duplex DNA molecules, and show how the action of a resolvase might give rise to either patch- or splice recombinant DNA molecules?

II. Write short notes on each of the following: (18 marks)

1. Regulation of ribonucleotide reductase by deoxyribonucleoside triphosphates (dNTPs).
2. Mode of DNA replication in *E. coli*.
3. The 3'-exonuclease activity of DNA polymerase I and the feature of an *E. coli* strain that lack this activity.
4. Role of nonhomologous DNA end-joining (NHEJ) in double-strand break repair (DSB repair).
5. Genetic deficiencies in mammalian mismatch and nucleotide excision DNA repair systems.
6. Outcomes of site-specific recombination.

III. Define each of the following: (4 marks)

1. Linking number (L)
2. Replisome
3. Processivity of a DNA polymerase
4. Single-strand assimilation

IV. Choose the correct answer: (10 marks)

1. **GMP inhibits which of the following reactions in purine biosynthesis?**
   a. 5-phosphoribosyl-1-pyrophosphate (PRPP) --> 5-Phospho-β-D-ribosylamine (PRNH2)
   b. Inosinate (IMP) --> Xanthylate (XMP)
   c. Inosinate (IMP) --> Adenylate (AMP)
   d. a. and b. are correct
2. **Lesch-Nyhan syndrome occurs consequent to deficiency of:**
   a. Adenosine deaminase (ADA)
   b. Adenine phosphoribosyltransferase
   c. Hypoxanthine-guanine phosphoribosyl transferase (HGPRT)
   d. Carbamoyl phosphate synthetase II (CPS-II)
3. **Which of the following is used during the conversion of uracil to thymine?**
   a. S-adenosylmethionine (SAM) b. Tetrahydrofolic acid (THF)
   c. Biotin d. CO_2
4. **Which of the following is NOT utilized in the conversion of ribose to deoxyribose?**
   a. NADPH b. UMP
   c. Thioredoxin d. Ribonucleotide reductase
5. **DNA synthesis proceeds:**
   a. In 5' to the 3' direction b. In the 3' to 5' direction
   c. In both directions at once d. From the centromeres to the telomeres
6. **Which of the following biomolecules has self-repair mechanisms?**
   a. DNA, RNA, and proteins b. RNA and proteins
   c. DNA only d. DNA and proteins
7. **DNA glycosylase is an enzyme involved in base excision repair (BER). Its function is:**
   a. Addition of correct base b. Addition of correct nucleotide
   c. Removal of incorrect base d. Removal of phosphodiester bond
8. **DNA damage tolerance is mediated via**
   a. Nucleotide excision repair (NER) b. Homologous recombination (HR)
   c. Translesion synthesis (TLS) d. b. and c. are correct
9. **Genetic recombination plays roles in:**
   a. Maintenance of genetic diversity
   b. Implementation of programmed genetic rearrangements during embryonic development
   c. Regulation of expression of certain genes
   d. All of the above
10. **In eukaryotic recombination, assembly of the Rad51:DNA filament depends on:**
    a. BRCA1 b. BRCA2
    c. Hop2-Mnd1 d. None of the above

Good luck
Dr. Rasha Hammad

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR LEVEL FOUR STUDENTS (SEMSTER 1) OF CHEMISTRY/BIOCHEMISTRY			
	COURSE TITLE:	CLINICAL BIOCHEMISTRY		COURSE CODE: BC4105
DATE:	11/01/2015	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOUR

I. Answer the following questions:

1. What is the principle of hippuric acid test? Why it is used as LFT? **(5 marks)**
2. **Write the scientific term of the following:** **(5 marks)**
   a. The concentration of a substance in blood beyond which it is excreted in urine.
   b. The total amount of iron that apotransferrin has the capacity to bind.
   c. Absence of albumin in serum.
   d. Maximum capacity of the kidneys to absorb a particular substance.
   e. The development process by which new erythrocytes are produced.

II. a. If 2160 ml of urine of an adult patient is collected over a 24 hour period and the concentration of creatinine in urine is 7.5mmol/L and that in plasma is found to be 150μmol/L. calculate the creatinine clearance of the patient and comment on the results. **(5 marks)**

b. Compare between each of the following: **(5 marks)**

1. The electrograms of serum proteins in chronic hepatitis and in multiple myeloma.
2. Hepatocellular jaundice and obstructive jaundice.

III. a. Explain each of the following: **(8 marks)**

1. The cause of hypoalbuminemia.
2. Regulation of heme biosynthesis.

b. Write short notes on the following: **(4 marks)**

1. Porphyrias.
2. Serum Transaminases.

IV. a. Write short notes on each of the following: (12 marks)

1. Formation of atherosclerotic plaques and their evolution.
2. Newer atherosclerosis risk factors.
3. Serum markers of myocardial infarction (MI).
4. Non-respiratory functions of the lung.

b. Complete each of the following: (6 marks)

1. The wall of a blood vessel is composed of three layers: ----------, ---------- and ----------.
2. ---------- occurs due to rare genetic mutations in enzymes implicated in homocysteine metabolism, while ---------- is due to reduced intake of folate, vitamins B6 and B12.
3. ----------, ---------- and ---------- are three forms of coronary artery disease (CAD).
4. ---------- is an important biomarker with an established role in the diagnosis of congestive heart failure (CHF).
5. ----------, ---------- and ---------- are components of the arterial blood gas (ABG) analysis that are interrelated and their results must be considered together.

Good luck

Prof. Dr. Ehab M. Ali
Dr. Thoria A. Aziz
Dr. Rasha Hammad

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	EXAMINATION FOR LEVEL FOUR STUDENTS (SEMSTER 1) OF CHEMISTRY		
	COURSE TITLE:	BIO-INORGANIC CHEMISTRY	COURSE CODE: CH4117
DATE:	1ST JANUARY, 2014	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOUR

1. a. For **three (and only three)** of the following metal ions describe in details the biological functions? (30 marks)
   i. Na^+ ii. K^+ iii. Ca^{2+} iv. Mg^{2+}
   b. Discuss the active site differences between hemoglobin and cytochrome?
   c. What are the differences between oxyhemoglobin and deoxyhemoglobin?

2. Explain UV-visible spectroscopy that would support the presence of a known metal ion in a biomolecule and the coordination geometry of a metal-amino acid complex? (10 marks)

3. Complete the following (20 marks):
   a. Cytochrome a is capable of ..... and .....
   b. Ferritin consists of shell of protein surrounding a core of ..... and iron percentage is .....
   c. Transferrin molecule has function of.....
   d. In human body the heme and non-heme iron are ..... and .....The iron percentages of both are ..... and ....., respectively.
   e. Functions of Zn in metalloenzymes are ..... The common ligands for Zn in biological systems are..... and the deficiency of Zn in mammals result in.....
   f. The oxidation states that copper adopts in the body are ..... and the function of Cu in metalloenzymes are.....

4. What is the reaction mechanism of the following : (20 marks)
   a. Liver alcohol dehydrogenase.
   b. Reaction catalyzed by nitritereductase.
   c. Oxygen binds within a crevice in myoglobin.

5. Choose the correct answer of the following questions (20 marks):
   i. What is the coordination of proteins to transition metals?
      a. Amino acids bind transition metal-1
      b. Direct coordination to metal active-site
      c. Indirect coordination: cofactors active-site
      d. All of the above

   ii. Mg-porphyrins are found in _____.
      a. Cytochromes
      b. Hemoglobin and myoglobin
      c. Chlorophyll
      d. All of the above

   iii. The functions of Fe-porphyrins are _____.
      a. Dioxygen carrier

باقى الاسئلة خلف الورقة

b. electron transfer
c. Both a and b
d. Photosynthesis

iv. Hemoglobin consists of _____.
a. Four myoglobin like subunit
b. One polypeptide chain
c. One heme group
d. Two β-units

Good luck
Prof. Dr. Mohamed El-Zaria

	Tanta University Faculty of Science Chemistry Department		
	Examination for forth Year Students		
	Course Title: Chemistry of Textile		Course Code:CH4121
	Date: January 2015	Total Assessment Marks: 50	Time Allowed: 2 hrs

1) Differentiate between each of the followings: (25 Mark)

1. Natural and man-made fibers.
2. Effect of acids, bases, oxidizing agents, Reducing agents, sunlight, heating on wool and silk.
3. Strength, resiliency, solubility, and heat conducting properties of Nylons and Aramid.
4. Abrasion, dyeing, laundering, drying, ironing properties of acrylic and modacrylic fibers.
5. Preparation of Nylon 6 and Nylon 6, 6.

2) <u>Mark (√) or (×) and correct the wrong statement:</u> (10 Marks)

1. Nylon is an example of regenerated fibers. ( )
2. The Secreted fibers are proteins of highly crosslinked by disulfide bonds from cystine residues in the protein chain. ( )
3. Wool is soluble in all solvents except those capable of breaking the disulfide crosslinks, but it does tend to swell in polar solvents. ( )
4. Silk exhibits good heat insulating properties and is little affected by heat up to 150°C. ( )
5. The aramids are difficult to dye except by special dyeing techniques with disperse dyes. ( )
6. Nylon 6 and 6,6 are highly resistant to chemical attack. ( )
7. The acrylic fiber has excellent stiff and moderate resiliency. ( )
8. Modacrylics are resistant to attack by household chemicals and have excellent sunlight resistance. ( )
9. Polyester is highly attacked by acid, bases, oxidizing, or reducing agents. ( )
10. Polyester has good laundering and dry-cleaning characteristics. ( )

تابع الأسئلة فى الصفحة القادمة

3) Choose the correct answer: (10 Marks)

1. Asbestos is a ..... :

a) Protein fiber b) mineral fiber c) natural fiber

2. Wool fibers possess..... strength:

a) High b) week c) low to moderate

3. Silk may be laundered under ..... conditions:

a) Week b) strong c) mild

4. Nylon 6, 6 can be safely ironed .....:

a) Up to 180°C b) up to 140°C c) up to 300°C

5. ..... are the strongest of the man-made fibers:

a) Nylons b) aramids c) protein fibers

6. ..... are formed from copolymers consisting of 35%-85% acrylonitrile.

a) Modacrylic fibers b) Acrylic fibers c) Polyester fibers

7. On heating above ....., acrylic fibers soften and undergo oxidative attack.

a) 100°C b) 200°C c) 300°C

8. ..... is formed through step growth polymerization of terephthalic acid with ethylene glycol at 250°-300°C in the presence of a catalyst.

a) Polyethylene terephthalate b) Modacrylic c) Acrylic

9. Polyester possesses ..... resiliency and recovery from bending deformation.

a) Low b) excellent c) fair

10. Rubber fibers are.....:

a) Natural fibers b) synthetic fibers c) regenerated fibers

4) Discuss the following: (5 Marks)

a) The chemistry of cellulose and show the effect of crystallinity on its properties.

b) Regenerated cellulose rayons.

c) Chemically modified cellulose fibers.

d) The concept of grafting as a mean of altering the properties of the original homopolymers. Illustrate your answer with examples.

e) Cross linking of cellulose for crease resist.

,,,,,,,,,,,,,,,,,,,,,,,,,, ***Good Luck*** ,,,,,,,,,,,,,,,

Prof. El-Refaie Kenawy **Dr. Mohamed Azaam**