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Tanta UNIVERSITY			
FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
EXAMINATION for Seniors (Third Year) students OF Biochemistry			
COURSE TITLE: Vitamins and inorganic metabolism		COURSE CODE 3107	
DATE: -1-2017	JANUARY, 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS 100 TIME ALLOWED: 2 HOURS

1- Pyruvate decarboxylase is an enzyme that catalyzes the conversion of pyruvate to acetyl-S-CoA. It need 5 types of vitamins
(40 marks)

- Write the reaction mechanism of this enzyme
- Named of these vitamins and write the chemical structure of CoASH.
- Write the structure of anti-pellagra vitamin.
- Role of sodium potassium pump in keeping sodium extracellular.
- Chemical structure of 1,25 dihydroxy colicalceferol and its role for calcium level in the plasma.
- Importance of intracellular carrier molecule (ICM) in regulation of iron metabolism in the body.


2- Give an account of the following: (30 Marks)

- Succinate dehydrogenase requires FAD catalyze the oxidation of succinate to fumarate in the citric acid cycle. Draw the isoalloxazine ring system of the cofactor resulting from the oxidation of succinate to fumarate and indicate which hydrogen in FADH₂ are lacking in FAD.
- Biosynthesis of anti-scurvy vitamin from glucose in rat.
- Deficiency of anti-beri- beri vitamin.
- Deficiency of blood phosphorus.
- Illustrate diagrams clarifying the absorption of iron from intestine.
- Exchange of carbon dioxide and oxygen from red blood cells and tissue.

3- Write the role of the following : (30 Marks)

- Role of vitamin K of blood coagulation
- Role of vitamin A in vision.
- Role of pyridoxine in transaminase enzyme
- Role of aldosterone hormone in potassium metabolism
- Role of Iron chelators in treatment of hemosiderosis.
- Role of Calcitriol in Phosphorus absorption.

مع تمنياتی بالتوفيق و النجاح


	TANTA UNIVERSITY, FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	FINAL EXAM FOR LEVEL 3 DOUBLE MAJOR STUDENTS			
COURSE	SURFACE CHEMISTRY AND CATALYSIS		CODE: CH 3143	
DATE	DEC 31, 2016	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 H

Question 1: Choose the correct answer of the followings (10 marks, 1 for each)

- 1) A solid surface acts as an adsorbent because it has
(a) definite shape (b) unsaturated vacant sites (c) small pores in it (d) high lattice energy
- 2) Physical adsorption is inversely proportional to the
(a) pressure (b) temperature (c) volume (d) concentration
- 3) The colloidal solution of silver in water can be easily obtained by
(a) mechanical precipitation (c) repeated washing
(b) Bredig's arc method (d) ultrasonic dispersion
- 4) When a colloidal solution is observed under a microscope we can see
(a) Light scattered by colloidal particles (c) Shape of colloidal particles
(b) Size of colloidal particles (d) Relative size of the colloidal particles
- 5) Which of the following statement **is not correct** regarding physical adsorption?
(a) it is fast (c) it is reversible
(b) it forms multimolecular layers (d) it has high heat of adsorption
- 6) Adsorption is the phenomenon in which a substance
(a) remains close to other substance (c) goes into the body of other substance
(b) accumulate on the surface of other substance (d) none of these
- 7) The process by which the colloidal particles aggregate or become bigger and settle down is
(a) peptization (b) coagulation (c) sorption (d) sedimentation
- 8) Colloidal solutions are not purified by
(a) dialysis (c) ultrafiltration (b) electro dialysis (d) sedimentation
- 9) ΔH is negative for adsorption, thus it is always exothermic
(a) True (b) False (c) none of these
- 10) What is the main result of adding surfactants into a liquid composed of two immiscible phases such as oil and water?
(a) Reduction in the interfacial tension between the phases.
(b) Increase in the interfacial tension between the phases
(c) Catalysis of a chemical reaction between the phases
(d) Nothing happens

انظر خلف الورقة

له تیروی خانہ

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT CHEMISTRY – BIOCHEMISTRY SECTION			
	EXAMINATION FOR JUNIORS (3RD YEAR) STUDENTS OF BIOCHEMISTRY SPECIAL AND DOUBLE			
	COURSE TITLE:	Amino acids and protein metabolism	COURSE CODE:	BC3103
DATE :26	JANUARY 2016-2017	TERM: FIRST	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOUR

Answer all the following questions: (10 mark each)

I) By equations only with full information illustrate the following:

- 1- Catabolism of one amino acid that form α -ketoglutarate?
 - 1- Catabolism of one amino acid that form pyruvate?
 - 2- Catabolism of one amino acid that form fumarate?
 - 3- Catabolism of one amino acid that form succinyl co-A?
 - 4- Synthesis of cysteine?
-

II) Give brief account on:


- 1- Importance of branched chain amino acids in treatment of liver diseases?
 - 2- What is the difference between synthase and synthetase enzyme?
 - 3- What is the relation between methionine and heart diseases?
 - 4- Biosynthesis of creatinine and its importance in clinical diagnosis?
 - 5- Speak about two amino acid derived compounds and their importance?
-

III) 1- How bilirubin be synthesized? What are types of jaundice?

- 2- What are different forms of iron in the body?
 - 3- In protein synthesis of a polypeptide chain of 70 amino acids, what is the number of high energy bonds needed? What is the importance of Wobble hypothesis?
 - 4- What is the importance of antibiotics in killing bacteria, giving examples?
 - 5- How occur post translational modifications?
-

أطيب الأمنيات بالنجاح و التوفيق

- ا.د: أفراح فتحي سلامه

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT CHEMISTRY – BIOCHEMISTRY SECTION			
	EXAMINATION FOR JUNIORS (3RD YEAR) STUDENTS OF BIOCHEMISTRY SPECIAL AND DOUBLE			
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- III) 1- How bilirubin be synthesized? What are types of jaundice?**
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أطيب الأمنيات بالنجاح و التوفيق

- ا.د: أفراح فتحي سلامة



وحدة ضمان الجودة
 كلية العلوم - جامعة طنطا
 QUALITY ASSURANCE UNIT
 FACULTY OF SCIENCE - TU

	Tanta University - Faculty of Science Department of Chemistry	
	Final examination for 3rd level students in Transition Elements Code No.: CH 3147 For all sections Term: 1st term 2016/2017 Date: Monday, 2/1/2017 Period: 1-3 PM Time allowed: 2 hrs. Total assessment: 50 marks	

I. Complete the following sentences (15 marks)

- 1- Transition Elements are defined as those elements that.....
- 2- The size of the d-block elements in a series decreases with increasing the atomic number (from left to right) because of
- 3- The atomic volume of Sc group (group IIIB) increases significantly in a regular manner from top to down because of.....but, in Ti group, the volume increases significantly from Ti to Zr, then slightly increases from Zr to Hf because of the lanthanide contraction which is defined as.....
- 4- Oxidation number is defined as For examples the ox. no.'s of the underlined elements in RuO₄, MnO₄²⁻ are..... and, respectively. In the first series of transition elements, the maximum oxidation number from Sc to Mn is equal to the sum of electrons of
- 5- The colors of the transition metal compounds may arise from:
(1).....(2).....(3).....(give examples)

II. Write down on Only Two of the following: (10 marks)

- a) Kroll's method for extraction of titanium and its uses.
- b) Nonstoichiometric compounds of transition metals.
- c) Four properties of the lanthanides.

III. Answer Only A or B: (10 marks)

- A) In terms of CFT, draw the energy level diagrams of the following ions:**
a) Fe³⁺(d⁵) in strong and weak octahedral ligand fields.
b) Ni²⁺(d⁸) in tetrahedral and square-planar ligand field. Explain briefly the factors affecting the magnitude of the splitting energy of d-orbitals,(Δ.)

Tanat university
Faculty of Science
Chemistry Department

First Term

Jun 2017
Time All . 2 hrs
Course No. : CH 3153

Final Examination of Organic chemistry for 3th year students

All Double Major
Hetero Cyclic

Total Assessment marks
100

Answer the following questions :

- (1) a-) Electrophilic substitution reaction on nitrogen atom in pyrrole (give examples)
b-) 1, 4 diketone to furan and pyrrole show by equations
c-) Resonating structure of pyridine
d-) O – Amino toluene to 2 – methylindole
- (2) Starting from ethylacetoacetate how can you synthesize
a-) 2, 4 dimethylpyrrole
b-) 2, 4, 6 trimethylpyridine
- Mannish reaction of thiophene
- O – Aminobenzaldehyde to 2, 3 dimethyl quinoline
- Explain five membered ring undergo Electrophilic aromatic substitution at 2 and 5 Position rather than 3 and 4 position
- (3) a-) Ring opening of pyrrole (effect of NH_2OH)
b-) Draw the resonating structure of thiophene
c-) Diels-Alder reaction of Furan
d-) O – nitro toluene to Indole derivatives
- (4) a-) Electrophilic substitution reaction on Carbon atom in Indole (give examples)
b-) 2 methyl pyridine and 4 methyl pyridine are more acidic (reactive) than 3 methyl pyridine
(Explain by examples)
c-) From Glycerol how can you prepare quinoline
d-) Give a method for preparation of 2 – methyl quinoline

With my Best Wishes

Dr. Mohamed Hamed

Prof. Dr. Mahmoud Fahmy

Tanta University

Electrochemistry Exam.

Faculty of Science

January 2017

Chemistry Department

3rd Year Students (All Double Course)

Time allowed: two hrs

Total Marks: 50

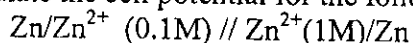
Course Code: CH3145

Answer The Following Questions(10 Marks for each question)

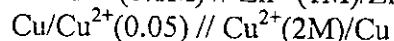
1.i-For the following electrochemical cell: $Zn/Zn^{2+} // Cu^{2+}/Cu$

Explain, draw, write the half-cell reaction that occurs at each electrode and write the overall balanced redox reaction. ii. What is electrochemical series? What are its applications?

iii. Calculate the cell potential for the following systems.



$$E^0 (Zn/Zn^{2+}) = -0.76 V$$



$$E^0 (Cu/Cu^{2+}) = + 0.34 V$$

2.i- Discuss the following types of electrodes and apply Nernst equation for each:

(a) Reference electrodes. (b) Quinhydrone electrode.

ii- Give a cell diagram of Weston standard cell and write down the anode, cathode and its total cell reaction.

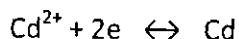
3.i- With the aid of figures and equations explain the differences between reversible and irreversible galvanic cells.

ii-Define: (a) Cell potential (b) Free Energy Change (c) Fuel cell efficiency

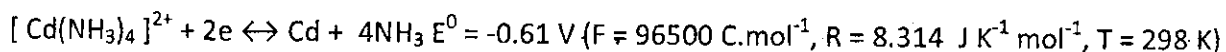
iii- Write down Nernst equation for the system $OX + ne \rightleftharpoons R$. and mention its application.

4.i-Discuss the reactions of the following fuel cells: a).H₂ – O₂ fuel cell b)- Methanol fuel cell c). Molten carbonate fuel cell.

ii- Using the following data, calculate the stability constant of the tetraammine cadmium (II) ion complex, and give the standard free energy change ΔG^0 for the final reaction:



$$E^0 = -0.4 V$$



5.i- Compare between primary and secondary batteries using cell diagram, anode reaction, cathode reaction and total cell reactions. Indicate your answer with examples.

ii- In solution containing OH⁻ ions at unit activity prove that any cell comprises oxygen and hydrogen electrodes, both operating reversibly with gases at one atm. pressure the cell will have voltage of 1.229 V. Explain your answer using E – pH plot.

GOOD LUCK

Examiners: Prof. Dr. Mohamed El-Morsi

Prof. Dr. Ibrahim Shibl



ضمان الجودة
شعبة العلوم - جامعة طنطا
QUALITY ASSURANCE UNIT
FACULTY OF SCIENCE - TANTA



Tanta University - Faculty of Science - Chemistry Department

Final Exam in "Instrumental 2"

For Third level students (Biochemistry + All Double Sections)

Course Code: CH 3149 - Total assessment marks: 100

Date: 14/1/2017 - Time Allowed: 2h

Question (1): Define (24 mark)

A) H^{PLC}; then draw the schematics diagram of the components.

What are the advantages and disadvantages of HPLC.

B) Selectivity of ion exchange resins and explain the factors affecting on it.

Question (2): Compare between (Four only) the following:

(28 mark)

A) Adsorption and Size Exclusion Chromatography.

B) TLC and HPLC chromatography.

C) Ascending and Radial development techniques.

D) Normal and Reverse phases.

E) R_f and R_{st} .

Question (3): Explain

(24 mark)

A) Detection and identification of spots on planar chromatography.

B) Elution development and its types.

Question 4): Write on (two only) the following:

(24 mark)

A) What are the acceptable properties of molecules; moving phase and stationary phase in Ion exchange and gel chromatography?

B) Factors affecting the separation by gas chromatography.

C) Applications of ion exchange resins.

***** Good luck *****

Examiners: Prof. Ahmed Rehab; Prof. Ali Abu Saif



COURSE TITLE:	LIPID METABOLISM	COURSE CODE: BC3101
DATE: 16-1-2016	TERM: FIRST	TOTAL ASSESSMENT MARKS: 75 TIME ALLOWED: 1 HOUR

Answer all the questions (section B)

I) Compare between each of the following:

(20 marks)

- Beta oxidation and de novo synthesis of fatty acid.
- Sphingophospholipids and glycerophospholipid (give example).
- The role of thiolase enzyme in beta oxidation and its role in ketolysis.
- The energy produced from beta oxidation of saturated palmitic acid (16C) and the energy produced from beta oxidation of unsaturated oleic acid (18C).

II) Complete the sentences:

(10 marks)

- is the minor pathway of oxidation take place when there is a problem in beta oxidation.
- Amphipathic fatty acid mean that fatty acid contain,
- Although the main site of ketogenesis is the liver it can not metabolize the keton bodies because
- PI-III anchors some enzymes to plasma membrane such as and
- The classifications of prostaglandins to PGf₁, PGf₂ and PGf₃ etc. is due to.....
- Serves as the carrier that transports activated long-chain fatty acyl groups across the
- In synthesis of PC is methyl group donor.

III) Give an account of the following by biochemical equation if possible:


(25 marks)

- Niemann picked disease.
- Ketoacidosis.
- Cardiolipin.
- Functions of prostaglandins.
- R-CH₂-CH(CH₃)-CH₂-COOH (give short note about the type of oxidation of this fatty acid).

IV) By fully labeled Digram or equations Explain each of the following: (20 marks)

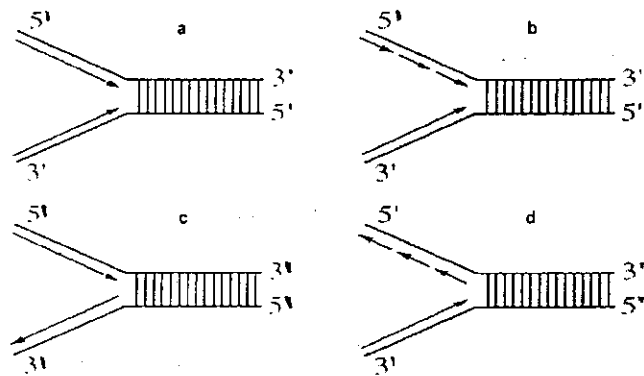
- Degradation of phosphatidyl choline.
- The role of CDP-choline in sphingomyline synthesis.
- The role of hydroxy methyl glutaryl coA reductase in cholesterol synthesis.
- The role of acetyl CoA carboxylase in the de novo synthesis of fatty acid.

EXAMINERS	PROF.DR. AHMED SAFAAN
	DR. MAI ELKEIY

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	EXAMINATION FOR JUNIOR (THIRD LEVEL) STUDENTS OF SPECIAL BIOCHEMISTRY		
COURSE TITLE:	NUCLEIC ACIDS METABOLISM		COURSE CODE: BC3105
DATE:	21.01.2017	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100
			TIME ALLOWED: 2 HOURS


ANSWER THE FOLLOWING QUESTIONS (THE EXAM IS IN TWO PAGES)

- i. a. **Indicate whether the sentence or statement is true (T) or false (F):**
Comment on your choice (20 marks)
- GTP is an example of a deoxynucleoside triphosphate ().
 - The *syn* conformers of nucleotides predominate in nucleic acids ().
 - Tautomerization conserves the base pairing properties of a nucleotide base ().
 - Hydrogen bonds link successive nucleotide units leading to the formation of a polynucleotide ().
 - DNA is more stable than RNA in alkaline condition because of the presence of 3' OH ().
 - Methotrexate (MTX) is a folate analogue that has been extensively used for treatment of neoplastic diseases ().
 - Reye's syndrome is a very rare genetic condition resulting from mutations in the gene encoding ornithine transcarbamoylase ().
 - Topoisomerases can change the number of nucleotides in a DNA molecule ().
 - When a DNA molecule is described as replicating bidirectionally, this means that it has two origins ().
 - The 5' → 3' exonuclease activity of *E. coli* DNA polymerase I is involved in formation of a nick at the DNA replication origin ().
- b. Brain cells are known to lack the mechanism responsible for the *de novo* biosynthesis of purine nucleotides. **Explain how synthesis of purine nucleotides occurs in these cells?** (8 marks)
- ii. a. Although dUTP is not a normal component of DNA, **why** do you think ribonucleotide reductase (RR) has the capacity to convert UDP to dUDP? (6 marks)
- b. When DNA replicates, each strand of the original DNA molecule is used as a template for the synthesis of a second, complementary strand. **Which of the following figures most accurately illustrates enzyme-mediated synthesis of new DNA at a replication fork and why?** (14 marks)



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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	EXAMINATION FOR JUNIOR (THIRD YEAR) STUDENTS OF BIOCHEMISTRY		
COURSE TITLE:	VITAMINS AND INORGANIC CHEMISTRY	COURSE CODE: BC3111	
DATE: 23-1-2017	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOUR

Answer all the questions

I) Complete the sentences:

(5 marks)

1. Pyridoxal phosphate is required for the synthesis ofthe precursor for the heme synthesis.
2. vitamin C is essential for the the hydroxylation of tryptophan to hydroxy tryptophan in the synthesis of
3. The coenzymes of folic acid are actively involved in the
4. The essential amino acid can serve as a precursor for the synthesis of nicotinamide coenzymes.
5. deficiency of ascorbic acid casuse.....

II) Give an account of the following:

(20 marks)

- Functions of pantothenic acid
- The action of calcitriol in elevating plasma calcium.
- Absorption , transport and storage of antisterility vitamin.
- The role of vitamin K in blood coting.
- Iodine metabolism

III) Acyl CoA dehydrogenase, acetyl coA carboxylase and α -keto glutarate dehydrogenase complex are enzymes need a vitamin act as coenzyme.

(15 marks)

1. Name and write the structure of each vitamin and its coenzyme.
2. Deficiency of each vitamin.

IV) Give an account on the following:


(10 marks)

- A. Three DS disease.
- B. Vitamin A deficiency
- C. Compare between absorption of heme and nonheme iron
- D. Coenzymes form of B12

With my best whichs
Dr. Mai El-Keiy

EXAMINERS	PROF. DR. AFRAH FATHY SALAMA
	DR. MAI ELKEYI

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