	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR THIRD YEAR-STUDENTS - DUAL SPECIALIZATION			
	COURSE TITLE:	electro chemistry		Course code CH3[illegible]5
DATE: 28 - 12- 2017	DEC, 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

Answer the following questions: (50 Marks)

1. a) Calculate K and ΔG for the following reaction at 25^0C (5 Marks)

$Pd_{(s)} + Cu^{2+}{}_{(aq)} \rightarrow Pd^{2+}{}_{(aq)} + Cu_{(s)}$ $Pd/Pd^{2+} = 0.126$ V and $Cu/Cu^{2+} = 0.34$ V

b) Does the reaction goes spontaneously (5 Marks)

$2I^-{}_{(aq)} + Cu^{2+}{}_{(aq)} \rightarrow I_{2(s} + Cu_{(s)}$ $I_2/I^- = 0.53$ V and $Cu/Cu^{2+} = 0.34$ V

Illustrate your answer.

c) What is the electrode potential of zinc electrode in which the concentration of Zn^{2+} ions is 0.01 M ($E^0{}_{Zn^{2+}/Zn} = -0.76$ V) (5 Marks)

2. a) Mention the basic principle of fuel cell and discuss the four types of fuel cells (10 Marks)

3) A galvanic cell can be represented by (10 Marks)

$Zn_{(s)} / Zn^{2+}_{(aq)} \| Cu^{2+}_{(aq)} / Cu_{(s)}$

i) Draw a diagram for the cell, Illustrate the direction of flow of current, electron flow and ion flow .

ii) Clarify the sign of the cathode and anode .

iii) Predict the cathode reaction , the anode reaction and the net cell reaction

iv) What is the name of phase boundary represented as || and why it is present

4) Explain the followings with the aids of equations (15 Marks)

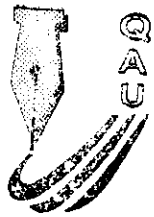
i) Lead acid storage battery

ii) metal-ion electrode

iii) Hydrogen electrode.

iv) Concentration cell

v) Nernst equation and its application



ضمان الجودة
QUALITY ASSURANCE
FACULTY OF SCIENCE

Good luck

EXAMINERS	PROF. DR. IBRAHIM SHIBL PROF. DR. YOUSSEF MOHARRAM

	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, 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 H

Please answer these questions

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

1) Which of the following best describes the movement of pollen grains in water?
   a) diffusion b) photosynthesis c) Brownian motion d) distillation
2) As the concentration of surfactant increases to the critical micelle concentration, the molecules are collected into a structure called:
   a) ball b) sphere of ions c) micelles d) dirt particle
3) Physical adsorption is directly proportional to the
   a) pressure b) temperature c) volume d) concentration
4) Foam is a colloidal system in which gas bubbles are dispersed in
   a) gas b) liquid c) solid d) none of these
5) The dispersion medium for the formation of fog is a liquid
   a) True b) False
6) Which of the following statement is correct regarding chemical adsorption?
   a) it is fast c) it is reversible
   b) it forms multimolecular layers d) it has high heat of adsorption
7) The use of membranes for separating impurities from colloidal suspension is
   a) sedimentation b) ultrasonic c) dialysis d) successive cooling
8) Among the Langmuir assumptions is an interaction between the adsorbed molecules on the surface
   a) True b) False c) none of these
9) Aggregation methods for preparation of colloids involve
   a) Ultrasonic waves b) solvent exchange c) mechanical dispersion d) Bredig's arc method
10) Adsorption is the a 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

Question (2) Mark (√) or (X) as appropriate (10 marks, 1 for each)

1) The sedimentation rate is affected by medium viscosity.
2) The BET adsorption equation includes the parameters P^o and ΔH_L.
3) V_m is the volume of gas required for the surface to be fully occupied .
4) The CMC of surfactant solution is directly proportional to the chain length .
5) The surface coverage (Θ) of a solid catalyst is equal to (1+KP) / KP.
6) The rod-like micelle is formed below the CMC.
7) The molar conductivity of surfactant solution increases with the concentration up to CMC.
8) The mean displacement of colloidal particles is inversely proportional to the diffusion coefficient.
9) The intercept of the relationship 1/V vs 1/P of Langmuir isotherm is $1/ bV_m$
10) The tendency for particles to migrate from a region of high concentration to a region of low concentration is controlled by the translation diffusion rate.

باقى الاسئلة فى الخلف

Tanta University - Faculty of Science

Department of Chemistry

FinalExamination for 3rd level students in Transition Elements

Code No.: CH 3147 Major: for all sections

Term: 1st term 2017/2018 Date: Tuesday, 2/1/2018 Period: 10-12 AM Time allowed: 2 hrs. Total assessment: 50 marks

I.Complete the following sentences (15 marks)

1- IUPAC organization defined transition elements 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, thenslightly 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 $\underline{Os}O_4$, $\underline{Mn}O_4^-$ 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 ....., but after Mn this number abruptly decreases because of .....

6- The colors of the transition metal compounds may arise from:
(1).....(2).....(3)..... (give examples)

II.Write down onTwoOnly of the following: (9 marks)

a) Zeigler-Natta catalyst for polymerization of ethylene.

a) Kroll's method for extraction of titanium and its uses.

c) Four properties of the lanthanides.

III. Answer the following:(16 marks)

A) In terms of CFT, draw the energy level diagrams of the following ions: a) $Fe^{3+}(d^5)$ in strong and weak octahedral ligand fields. b) $Ni^{2+}(d^8)$ in tetrahedral and square-planar ligand field.

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	Examination For Level Three Students of Chemistry / Zoology			
	COURSE TITLE:	FUNCTIONAL HISTOLOGY		COURSE CODE:Z03145
DATE:	4- 1- 2018	TERM:FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HRS

I. Answer the following: (50 Marks)

Choose TWO ONLY of the following:

1- Write on the skin derivatives in the humans.

2- Explain what is meant by each of the following; then explain the interrelation between these different terms:

A. Tissue B. Organ C. Organogenesis D. Organology

3- Compare and contrast between the structure of

A. Large vein and that of an artery.

B. Thin skin and thick skin.

II. Answer the following: (50 Marks)

A) Choose the correct answer(s): (15 Marks)

1. What make up juxtaglomerular apparatus?
   a. PCT b. Juxtaglomerular cells c. Macula densa d. Both b and c
2. Which hormone is NOT secreted by the anterior pituitary gland?
   a. ACTH b. FSH c. STH d. ADH
3. Where are podocytes seen?
   a. Macula densa b. Visceral layer of Bowman's capsule
   c. Parietal layer of Bowman's capsule d. Juxtaglomerular cells
4. The cells forming the proximal convoluted tubule of renal cortex are of which type?
   a. Simple squamous epi. b. Simple cuboidal epi. c. Stratified squamous epi. d.Transitional epi.
5. What cell type secretes prolactin?
   a. Thyrotropic cells b. Lactotropic cells c. Somatotropic cells d. Corticotropic cells
6. Where is renin secreted from?
   a. Visceral layer of Bowman's capsule b. Parietal layer of Bowman's capsule
   c. Pedicels d. Juxtaglomerular cells e. Macula densa
7. Which of the following cells of the kidney has the thinnest cytoplasm?
   a. Those of the proximal tubule. b. Those of the distal tubule.
   c. Those of the collecting tubule. d. Those of the loop of Henle.
8. Thyroid gland secretes T4. True or False
9. ADH effects on the collecting tubules. True or False
10. ACTH controls the secretion of cortisol. True or False
11. Adrenal medulla secretes epinephrine. True or False
12. Zona glomerulosa secretes androgen. True or False
13. Parathyroid hormone (PTH) secretes from parafollicular cells. True or False
14. Oxytocin is secreted from pars intermedia. True or False
15. The adrenal gland secretes sex steroid hormone from chromaffin cells. True or False

Tanta University – Faculty of Science – Department of Chemistry

Final Examination for Junior (Third Level) Students
All Double Major Sections

Course Title:	Physical Organic Chemistry		Course Code: CH3151
Jan. 2018	Term: First	Total Marks: 50 Marks	Time allowed: 2 Hours

Answer the following questions :

1) On the bases of Hammett correlation, illustrate by mechanistic equations the following:

a- The reaction pathway of m- and p- substituted benzaldehydes with semicarbazide at different **PHs** in ethanol and 25°C. **(4 marks)**

b- Acetolysis of 3-aryl-2-butyl brosylate. **(4 marks)**

c- The $(LFER)_s$ break down (deviate from correlation) in part of some reactions of p-substituted derivatives. (Two examples) **(4 marks)**

d- The hydrolysis of m- and p- substituted benzoyl chlorides. **(4 marks)**

2) All the following statements are false, please illustrate the correct answer:

a- The rate of S_N1 hydrolysis of p- methoxy phenyl dimethyl carbinyl chloride is less than unity. **(3 marks)**

b- The acetolysis of exo - norbornyl brosylate by N.G.P. gives racemic mixture through classical carbocation intermediate. **(3 marks)**

c- In The N.G.P. by both sulpher and nitrogen, the isolated product is secondary alcohol in hydrolysis reactions. **(3 marks)**

d- The reaction of m- and p- substituted styrene with Br_2 in CCL_4 is S_N1 and ρ (+ve & -ve) values. **(3 marks)**

3) **a- Write** a brief summary on Hammett equation. **(5 marks)**

b- Calculate the rate of saponification of both m-methyl ethylbenzoate and m-methoxy ethylbenzoate (Given that ρ=2.54, $\sigma_{m\text{-methyl}}$= -0.069 and $\sigma_{m\text{-methoxy}}$=0.12), **then Comment on your answer.** **(5 marks)**

Please Turn Ove

Tanta University – Faculty of Science – Department of Chemistry

Final Examination for Junior (Third Level) Students
All Double Major Sections

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Tanta University – Faculty of Science – Department of Chemistry

Final Examination for Junior (Third Level) Students
All Double Major Sections

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Jan. 2018	Term: First	Total Marks: 50 Marks	Time allowed: 2 Hours

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Please Turn Ove

Tanta University – Faculty of Science – Department of Chemistry

Final Examination for Junior (Third Level) Students
All Double Major Sections

Course Title:	Physical Organic Chemistry		Course Code: CH3151
Jan. 2018	Term: First	Total Marks: 50 Marks	Time allowed: 2 Hours

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Please Turn Ove

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: **15/1/2018** – Time Allowed: **2h**

Question (1): (20 mark)

Compare between the following:

A) Column diameters, stationary phase and moving phase in GC and HPLC.
B) TLC and HPLC chromatography.
C) Radial and ascending development techniques.
D) Normal and Reverse phases chromatography.

****

Question (2): (20 mark)

Explain the following:

A) Applications of ion exchange and gel chromatography in brief.
B) Using of GC in identification and quantitative of components.

****

Question (3): (20 mark)

Write on (two only) the following:

A) Draw schematic diagram with liable its parts of HPLC, then state the advantages and disadvantages of HPLC.
B) Define "Selectivity factor", of ion exchange resins and explain the factors affecting on it.

****

Question (4): Chose the correct answer: **(2 marks for each)**

1) The basis of chromatography for separating components of a mixture is ..

A) The differing movement of particles of different mass in an electric field.
B) The interaction of the components with both stationary and mobile phases.
C) The absorption of infrared radiation by the components.
D) The deflection of charged particles in a magnetic field.

B. will spend more time dissolved in the mobile phase than attached to the stationary phase.
C. must have a high molecular mass.
D. will move at a speed close to that of the solvent

10) What does the selectivity factor describe?

A. The proportional difference in widths of two chromatographic peaks.
B. The maximum number of different species which a column can separate simultaneously.
C. The relative separation achieved between two species.
D. None of the above.

11) Which is most correct, ion exchange is used to analyse:

A. Inorganic ions. B. Organic ions. C. Metal ions.
D. Most molecules that form ions.
E. Cells and proteins and aminoacids.

12) Which of the following is not true about HPLC?

A) There is no need to vaporize the samples,
B) It requires high pressure for the separation of the specious,
C) It has high sensitivity D) It is performed in columns

13) A new youth drink contains sugar, salt, alcohol and vitamin C. A gas chromatogram could be used to determine the ...

A. alcohol and sugar content only. B. alcohol content only.
C. alcohol, sugar and vitamin C content only.
D. concentration of all ingredients in the drink.

14) An eluotropic series

A. Ranks column packing material by their relative abilities to retain solutes on the column,
B. Is a measure of the solvent adsorption energy,
C. Ranks solvents by their relative abilities to displace solutes from a given absorbent,
D. none of the above

15) HPLC methods include:

A. liquid/liquid (partition) chromatography,
C. ion exchange and size exclusion chromatography,
B. liquid/solid (adsorption) chromatography,
D. all of the above.

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BIOCHEMISTRY,			
	EXAMINATION FOR (JUNIORS) STUDENTS OF CHEM/BIOCHEM SECTION			
	COURSE TITLE:	CARBOHYDRATE AND LIPID METABOLISM		COURSE CODE: 3101
DATE: 17-1.2018	JANUARY, 2017	FIRST TERM EXAM	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

SECTION A CARBOHYDRATE METABOLISM

Answer the following questions:

I- A-EXPLAIN EACH OF THE FOLLOWING:- *(8 marks each)*

i-The simultaneous carrying out of glycolysis and gluconeogenesis is an example of a futile cycle, represented by the following equation: $ATP + H_2O \rightleftharpoons ADP + P_i + heat$

ii- The PDHc reaction occurs in three successive steps that are catalyzed by three different subunits $(E_1\text{-}E_3)$.

iii-At the conclusion of the reactions of non-oxidative HMPS, three molecules of ribulose-5-phosphate have been converted to two molecules of fructose-6-phosphate and one molecule of glyceraldehyde-3-phosphate.

iv- Glycogen is synthesized when glucose supply is high, and its degradation helps to maintain the blood glucose level when we are fasting.

II- CLARIFY EACH OF THE FOLLOWING:- *(7 marks each)*

i The passage of both the glucose and the galactose, is mediated by SGLT1, Fructose, enters into the cells by facilitated diffusion, also called passive transport

ii- In the liver fructokinase requires the function of additional enzymes to utilize the trace of fructose found in food.

iii- Regulation of PDH by allosteric effectors and by phosphorylation

III- CHOOSE THE CORRECT ANSWER (S). *(3 marks each)*

i-Ethanolic fermentation in yeast serves a dual purpose through formation of :-
a-NADH b- NAD+ c-ethanol d- pyruvate

ii-Energy-rich substrate (s) of glycolysis is (are)
a- PEP b-DHAP c-1,3-bisphosphoglycerate d- glyceraldehyde-3P

iii- Ethanol degradation inhibits gluconeogenesis through the formation of
a- Acetaldehyde b-acetate c- acetyl CoA d- NAD+

iv-The basic idea of the TCA cycle consists in releasing substrates carbon as
a- citrate b- isocitrate c- CO_2 *d-oxaloacetate*

v- The oxidative phase of HMPS, in which glucose-6-P is oxidized and decarboxylated to
a- ribulose-5-P b-fructose-6-P c-Ribose 5-P d-Xylose 5-P S

PROF. Dr. AHMED SAAFAN

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR JUNIORS (THIRD YEAR) STUDENTS OF CHEMISTRY AND ENTOMOLOGY			
	COURSE TITLE:	INSECT BEHAVIOR		COURSE CODE: EN 2240
DATE:8/1	JANUARY, 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS:150	TIME ALLOWED: 2 HOURS

Answer the following question groups:

I. First group of questions (Total 30 Marks)

1. Correct the following statements (Total 4 Marks, 1 each)

a. Migration flights show great diversity in their length and orientation.

b. Male moths stimulated to take off by an increase in humidity.

c. A sudden fall in wind speed leads to sharp decrease in number of insects taking off.

d. The best-known example of two-way migration flight is that of the desert locust, *Schistocerca gregaria.*

2. Choose from between the brackets the correct answer (Total: 3 Marks, 1 Each)

a. Change in light intensity provide important stimulus promoting take off in (locusts----------*Anax*).

b. Insects that migrate from breeding areas to places where they hibernate or aestivate are with (unusually long life span-----life-span limited to a single season).

c. Chinch bugs migrate (by flying ----------on the ground).

3. Fill in the blanks with the appropriate words (Total: 10 Marks, 1 each)

a. The three functions insect flight is.....and.....

b. The Internal limiting factors of insect flight activity are.....

c. The three types of insect migration are.....,.....and.....

d. The only regular insect transoceanic migration known is made by.....

e. The reasons that the Monarch butterfly migrates in autumn are.....and.....

f. Day-flying predators, flower- and leaf-eating insects relay on ....., while crepuscular and nocturnal forms depend on .....to find their food or mate.

g. Trivial flights are concerned with.....

h. Initial inability of insects to fly is related to....., and.....

i. If wind-speed is high over long periods, flight occurs mainly during .....

j. Nocturnal insects, fly when it is ... and do not fly when.....

III. Third group of questions (Total 60 Marks)

1-Indicate whether the following statements are true (T) or false (F) and correct the wrong part if present (Total 10 Marks)

a) Plants and other cues characteristic of habitats containing hosts are important in host habitat location by parasitoids. ( )

b) The light compass reaction is a special case of telotaxis in which movement occurs at a constant 90° angle to a light source. ( )

c) kairomone in the frass of Agrotis ipsilon triggered oviposition activity in a Tachinid parasitoid. ( )

d) Naive parasitoids respond to kairomones, while experienced females do not respond to an external marker. ( )

e) Superparasitism decreases as the density of conspecific parasitoids increases. ( )

2- Write the scientific term of each of the following: (Total:10 Marks)

a) Coordinated movements: walking, flying, swimming, etc., that occurs in response to an external stimulus.

b) When bilateral sense organs are used to determine the stimulus direction.

c) The movement of an organism in response to light.

d) Learning without obvious reward.

e) The simplest way of the dance types performed by honeybees.

f) *Ephestia* larvae placed in a track with a series of T-shaped turnings and forced to turn the same way of the bends, will continue such turns when they are set free.

g) The form of adaptive behavior or neuroplasticity that is non-associative learning.

h) The type of association, where the insects is punished after responding to a given stimulus.

i) The inborn patterns of movements and behavior.

j) The production of new adaptive response in circumstances not previously encountered.

3-Correct the following sentences with correct words (Total: 10 Marks)

a) Klinotaxis means the frequency or rate of turning is proportional to stimulus intensity.