	TANTA UNIVERSITY FACULTY OF SCIENCE ZOOLOGY DEPARTMENT		
	FINAL EXAM OF MAJOR ZOOLOGY, Chemistry / Zoology, Biophysics, BIOCHEMISTRY, CHEM/BIOCHEMISTRY Divisions		
	COURSE TITLE:	**Cell Biology and Genetics**	COURSE CODE: ZO 2101
	TERM: 1st SEMESTER	DATE OF EXAM: 17 JAN, 2016	ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

First Question: (40 marks)

Q1-a: Identifid only four of the following: 10 marks

1. Infarction   2. Cell death   3. Contrast   4. Centrifugation   5. Karyorrhexis

Q1-b: What is different between of the following: 20 marks

1: Apoptosis and necrosis

2: Atrophy and hypertrophy.

3: Histology and histopathology.

4: Hyperplasia and metaplasia.

Q1-c: Write of the following: 10 marks

1. Causes of cell injury

2. Importance's of apoptosis

Second Question: (30 marks)

Q2-a: Fill in the spaces: 20 marks

1. -------------- is abnormal increase in intersistial fluid. The volume of IF carefully controlled by osmotic pressure, hydrostatic pressure and lymphatic drainage

2. ---------------- is abnormal blood clot formation in the circulatory system

3. ------------------------- is extravasation of blood due to vessel rupture. May be due to trauma l.

4. ----------------------- is an inflammatory disease of large and medium sized systemic arteries characterised by the formation of lipid-rich plaques in the vessel wall.

5. ---------------------------- is a *reversible* change in which one adult cell type is replaced by another.

6. ---------------------------- is part of a complex system of communication that governs basic cellular activities and coordinates cell actions.

7. ---------------------------- means the series of morphological changes occurring in a cell or group of cells following lethal injury.

8. ----------------------- It is the study of microstructures of abnormal tissues and organs.

9. ------------- is to separate the major organelles of the cells.

10. -------------- Refers to the thickness of the specimen that will be in acceptable focus.

Q2-b: With full labeled drawing illustrate the following: 10 marks

1) The morphology of apoptosis and necrosis.

2) Cell fractionation to separate the major organelles of the cells.

TANTA UNIVERSITY

FACULTY OF SCIENCE – DEPARTMENT OF MATHEMATICS AND STATISTICS

EXAMINATION FOR SENIORS (2TH LEVEL) STUDENTS OF BIOLOGY

Course Title: Introduction To Statistics	Corse code: ST2105
Date: Tuesday 24/1/2017	Total Assessment Marks: 50	Time Allowed: 2:00 Hours

Answer the following questions:

Q1 – The following data set are the weights of experimental animals: **(12 Marks)**

$$1, 4, 5, 2, 7, 4, 8, 5, 9, 2 \text{ and } 8$$

a - Find the mode, range and mean deviation of the weights of these animals.

b - Is the sample homogeneous or hetrogeneous? Interpret.

c - Draw the box - whisker plot. Interpret the results.

Q2 – A college statistics department wishes to determine if there is a relationship between the hour *(x)* at which its classes meet and the number of absences *(y)* for the class during one month. In classes of comparable size, they observed the following data: **(8 Marks)**

$$(x,y): (2,3), (4,5), (7,9), (5,7), (3,4), (5,6), (6,7), (4,6), (7,8), (3,5)$$

a – Make a scatter diagram of the data, and plot the regression line on the diagram.

b – Calculate the correlation coefficient between x and y by two different methods.

c – If $X = x - 5$, $Y = y + 7$, find linear correlation coefficient between X and Y.

d - Interpret the results in a, b and c.

Q3 – A shipment of grapefruit arrived containing the following proportions of types: *10* percent pink seedless, *20* percent white seedless, *30* percent pink with seeds, *40* percent white with seeds. If a grapefruit is selected at random from the shipment, what is the probability that it is: **(9 Marks)**

a – Seedless?

b – White?

c – Pink and seedless?

d – Neither pink nor seedless?

e – Pink, if it is seedless?

f – Seedless, if it is pink?

g – Pink not seedless?

h – Seedless not pink?

i – g or h?

Q4 – Let X be a continuous random variable with probability density function: **(8 Marks)**

$$f(x) = \begin{cases} k\, x(2 - x), & 0 \le X \le 2 \\ \\ 0, & \text{Otherwise} \end{cases}$$

a – Find the value of the constant k.

b – Calculate $p(1 < X < 3)$.

c – Compute the relative variation of the variable X. Interpret.

Please, look at Page 2

Tanta UNIVERSITY
Faculty of Science
Department of CHEMISTRY
Examination of second level (General Chemistry students)

Course title:	Chemical Thermodynamics	Course Code: CH2141
Date 5 Jan. 2016	Total Assessment Marks: 100	Time allowed: 2 hours

Answer the following questions (100 marks)

1- Write only the mathematical equations for the following (define each term): (20marks)

(a) The relation between ΔG and ΔH

(b) The relation between ΔH and the temperature.

(c) The relation between ΔH and ΔE.

(d) The relation between the vapor pressure and the heat of vaporization of a liquid.

(e) The relation between Q and ΔE

2- (i) Consider compound A is in equilibrium between its liquid and its solid states at constant Pressure, derive the relation between the pressure and temperature (Clausius equation). (10marks)

(ii) If one mole of an ideal gas is compressed isothermally and reversibly from 10 to 50 atm. At 27°C. Determine the work done, Q, ΔS and ΔG for this process. $R= 2$ cal $K^{-1}mol^{-1}$. (10 marks)

3- (i) 4 moles of an ideal gas at 40°C and 10atm were allowed to expand adiabatically until its pressure reduced to 2 atm. Determine the final temperature and the entropy change for this process ? Assume $c_v = 5R/2$ and $R = 2$ calJ$K^{-1}mol^{-1}$ (12marks)
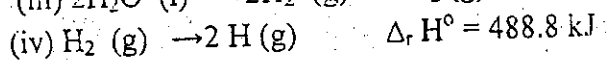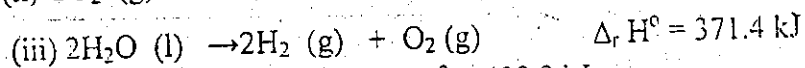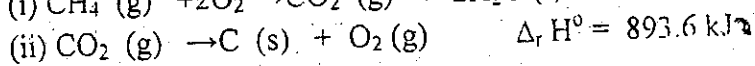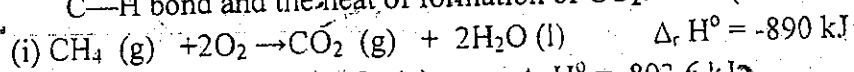
(ii) Derive the relation between c_p and c_v for the ideal gases. (8marks)

4- (i) Explain briefly, why ? (10 marks)

a- ΔE is considered to define the internal energy instead of E.

b- The heat engine cannot convert heat to work isothermally.

(ii) Use the following thermochemical equation to determine the average bond enthalpy for a C—H bond and the heat of formation of CO_2. (10 marks)

(i) CH_4 (g) $+2O_2 \rightarrow CO_2$ (g) $+ 2H_2O$ (l) $\quad \Delta_r H° = -890$ kJ

(ii) CO_2 (g) $\rightarrow C$ (s) $+ O_2$ (g) $\quad \Delta_r H° = 893.6$ kJ

(iii) $2H_2O$ (l) $\rightarrow 2H_2$ (g) $+ O_2$ (g) $\quad \Delta_r H° = 371.4$ kJ

(iv) H_2 (g) $\rightarrow 2 H$ (g) $\quad \Delta_r H° = 488.8$ kJ
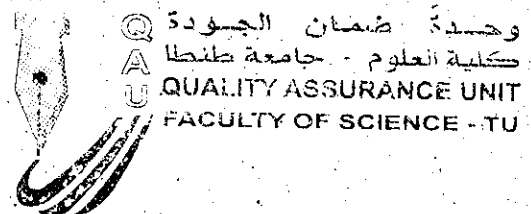
5- Define the following: (20marks)

(i) The Joule -Thomson coefficient

(ii) The intensive and Extensive properties of the thermodynamic systems.

(iii) Hess's law of constant heat summation.

(iv) The Carnot Theorem.

(v) The second law of thermodynamics.

Good Luck

Examiner: Prof.Dr. :H.El-Dally and Prof. Dr.:M.H.Shaaban

		TANTA UNIVERSITY · FACULTY OF SCIENCE	
		DEPARTMENT OF CHEMISTRY	
		Final Examination of for second year students (Double major)	
	COURSE TITLE:	Organic Chemistry 2	COURSE CODE: CH2111
DATE:	JAN. 20017	TERM: FIRST TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions: (Each question 25 marks)

1] a) Give the structural formula of isomeric amines having the M.F. $C_4H_{11}N$. How could you distinguish between them?

b) **The following names are incorrect. Draw the structures they represent and give the correct names** i) 2-Isopropyl-4-methylheptane.   ii) 3-Vinyl-1-propene   iii) 1-Ethyl-5-dimethyl-1-hexyne.

c) Treatment of C_4H_9Br (A) with alcholic KOH gives C_4H_8 (B) which can be oxidized by acidified $KMnO_4$ to $C_3H_6O_2$ (D), CO_2 and H_2O, the reaction of (B) with HBr gives (E) which is an isomer of (A). Identify compounds from (A) to (E) by complete equations.

2] a) **What happen by equations when:**

i) Halogenated acids are heated with sodium hydroxide.

ii) Acetone is heated with iodine and sodium hydroxide. (Write the mechanism).

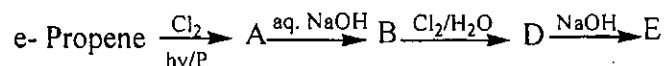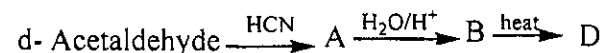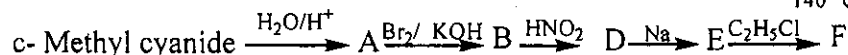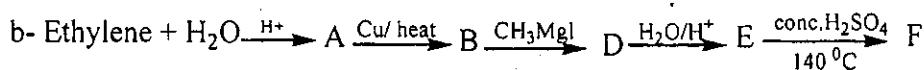iii) Action of sodium hydroxide on a mixture of benzaldehyde and formaldehyde.
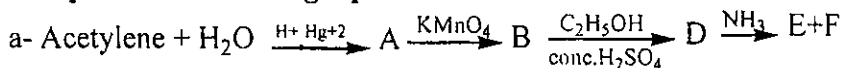
b) **Explain by equations the reaction of 2-chloropropane with each of the following reagents:**

a) aq. KOH   b) NaOEt   c) 2Na/ether   d) alc. KOH

3] **Suggest the reaction sequences for the following conversions:**

a) Phthalimide into ethylamine   b) Methanol into acetylchloride.
c) Acetylene into 2-hexyne.   d) Ethylene into dioxane
e) Ethyl alchol into butanone

4] **Complete the following equations:**

a- Acetylene + H_2O $\xrightarrow{H+ \ Hg+2}$ A $\xrightarrow{KMnO_4}$ B $\xrightarrow[conc.H_2SO_4]{C_2H_5OH}$ D $\xrightarrow{NH_3}$ E+F

b- Ethylene + H_2O $\xrightarrow{H+}$ A $\xrightarrow{Cu/ heat}$ B $\xrightarrow{CH_3MgI}$ D $\xrightarrow{H_2O/H^+}$ E $\xrightarrow[140\ ^0C]{conc.H_2SO_4}$ F

c- Methyl cyanide $\xrightarrow{H_2O/H^+}$ A $\xrightarrow{Br_2/ KOH}$ B $\xrightarrow{HNO_2}$ D $\xrightarrow{Na}$ E $\xrightarrow{C_2H_5Cl}$ F

d- Acetaldehyde $\xrightarrow{HCN}$ A $\xrightarrow{H_2O/H^+}$ B $\xrightarrow{heat}$ D

e- Propene $\xrightarrow[hv/P]{Cl_2}$ A $\xrightarrow{aq. NaOH}$ B $\xrightarrow{Cl_2/H_2O}$ D $\xrightarrow{NaOH}$ E

Good Luck

Prof. Dr. Adel Slem, Prof. Dr. Mahmoud Badawy and Prof. Dr. Sahar El-khalafy

	TANTA UNIVERSITY FACULTY OF SCIENCE ZOOLOGY DEPARTMENT
	FINAL EXAM OF MAJOR ZOOLOGY, Chemistry / Zoology, Biophysics, BIOCHEMISTRY, CHEM/BIOCHEMISTRY Divisions
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Q2-b: With full labeled drawing illustrate the following: 10 marks

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ANSWER THE FOLLOWING QUESTIONS

1. **Write on the following with drawing if possible (120 Marks)**
   a. Types of changes in chromosome number and structure.
   b. Incompitability alleles in plants.
   c. Genetic balance and sex determination.
   d. Cell cycle and C-value.
   e. Different types of chromosomal systems.
   f. Genetic significance of mitosis and meiosis.

2. **Mark the correct answers with the sign (√) and the wrong answers with (X)**
   (30 Marks)

   a. The coat color in rabbit is controlled by four alleles. (   )
   b. Meiosis I is called a reduction division. (   )
   c. The ABO blood groups are controlled by single gene with four alleles. (   )
   d. The seed coat color in garden pea is controlled by pseudo-alleles. (   )
   e. Meiosis keeps the number of somatic chromosomes constant across generations. (   )
   f. Chiasma formation at meiosis is an indication of crossing over. (   )
   g. The test cross involves two homozygous contrasting phenotypes. (   )
   h. Genes must be transmitted from generation to generation via somatic cells. (   )
   i. Quantitative traits are mostly affected by the accumulation of genes. (   )
   j. Monohybrid cross involves contrasting expression of the same character. (   )

   Examiners:

   With our best wishes

   Prof. Dr. Adel Elshanshory   **Dr. Reda Gaafar**