المستوى الرابع - كيمياء وحيوان . أجنة تجريبي (ع ٢٠٢)

Faculty of Science Zoology Dept. Level 4th Zoology & chemistry	Final Exam Time: 2 hours Degree : 60 Experimental Embryology

Answer the following questions:

Q1: Write short accounts on the followings:

1. *Regeneration of lens in amphibian.*
2. *Ovulation.*
3. *Role of stem cells in repair & cancer.*
4. *Functions of Sertoli cells.*

Q2: Illustrate the followings:

1. *What do you mean by the following definitions: Adult & embryonic stem cells, Plasticity-Antigen, Regeneration.*
2. *Regeneration of limb.*
3. *Role of infections and metabolic diseases in the induction of congenital abnormalities.*
4. *Structural chromosomal abnormalities.*

Q3: Discuss briefly the followings :

1. *Skull bone sutures and skull abnormalities.*
2. *amniocynotosis.*
3. *Limb abnormalities.*
4. *Meninogocoele & meningoencephalocoele.*
5. *Spina bifida occulata.*

With my best wishes:

Prof. Dr. Hassan Ibrahim El-Sayyad   Dr. Heba Atef El-Ghawet

٤ كيمياء وحيوان - تشريح مقارن وتطور (٢٠١٢)

Mansoura University
Faculty of Science
Zoology Department
Subject: Comparative anatomy
Full Mark : 60

First Term
Fourth level: Chemistry & Zoology
Date: 31 December 2011
Time Allowed: 2 hours

Answer the following questions

Q1- Fill in spaces with correct words: (20 Mark half for each space)

a-In the first tetrapods, the mid-dorsal bones presented by ------ and ------ while the occipital bones presented by ----- and ------ but the otic bones presented only by ------.

b-The morphological colour change is a slow process related to -----, ------ and -------- and controlled by ------ and endocrine glands including ------, and ------ .

c- In shizocoely, the embryonic mesodermal somites differentiated into -----, ------- and ------- whereas myocoel formed in the upper one while ----- and ------formed in the other two which give rise in the adult ---- and ----- respectively.

d- The obstacles of following up the development of body cavity are ------ of the coelom and ------, ------ and ------ of the mesentery as well as the appearance of -------.

e-The second splanchnic arch formed of ----, ---- and ---- in which the first piece either play a part in -------- as in all ----- or converted to give rise ---- as in all ----- which perform a ------ function.

f- The top surface of the cheek teeth named ---- which differentiated into ----, -----, ----- and ----- as in ----, ----, ---- and ------ .

Q2- Find out the name of the following items and mention two different functions (20 Mark 2 for each)

a- Sheets of serous membrane extend across the body cavity.

b- The most familiar integumentary glands characteristic to the majority of aquatic organisms.

c- A collection of mesenchymal cells formed during the development of any hard structure.

d- An integumentary structure arise from the modification of multicellular glands in some fishes.

e- A layer of an epithelial tissues without innervation or vasculature.

f- Hard structures derived from both layers of skin which associated with the appearance of splanchinocranium.

g- The most superficial and the hardest hard tissue.

h-A hard structure of B keratin appear firstly in the first amniotes.

i- Two different canals belonging to the axial endoskeleton.

j- A star- like cells represented the second element of the largest system of the body.

Q3 Answar as mentioned between brackets (20 Mark)

a- Hard tissue contain 25% organic compounds (give the name and origin).

b- A partition of coelomic cavity specific of some male mammalian species (give the name and one function).

c- Dermal hard structure characteristic to some males of the first hot-blooded animals (give name and one function).

d- The splanchnic arches supported the pharyngeal region (give the name their number and the number of the pieces formed each one)

e- The transverse septum of mammals (give name, its nature and one function).

f- Hard structures belonging to both exo and endoskeleton (give the names of two different structures, their endoskeletal origin and one function for each.

g- An epidermal hard structure characteristic to mammals only (give name, component, two different types).

With Best wishes Prof.Dr. Zeinab El Gohary

الفصل الرابع - كيمياء نبات - كيمياء بسطوح ٤٤٥ هـ
كيمياء هواء

Mansoura University
Faculty of Science
Chemistry Department
Course: Physical Chemistry
Date : Jan. 2012

Final Examination
Subject: Chemistry (445)
Fourth level
Full Mark : 60 Marks
Time Allowed : 2hours

Section (A) Chemical Spectroscopy (30 Marks) الامتحان في صفحتين

1.a) Write on details on the different types of molecules according to their pure rotation spectra.(7.5 Marks)
b) Explain: Reduced mass –angular momentum for rotational spectra and force constant . (7.5 Marks)

2. a) Explain the vibrational spectra of water molecules. (7.5 Marks)
b) The microwave spectrum of HCl shows a series of lines separated by 2.828 cm^{-1}. Calculate the moment of
inertia and the internuclear distance in the molecule. (7.5 Marks)

($h=6.62x10^{-27}$ erg .S, $N_A = 6.02x10^{23}$,atomic weights : H= 1,Cl = 35.5).

Section (B) Answer the Following Questions: (30 Marks)

I- Choose the response answer: (10 mrks)

1- Chemical adsorption is
a) exothermic b) irreversible c) favored by high temperature d) all of these

2-The extent of physisorption
a) decrease with rise in temperature b) increases with rise in temperature
c) independent of temperature d) first increases and then decreases with rise in temperature

3- The curve indicating the variation of adsorption with temperatue at constant pressures known as
a) adsorption isotherm b) adsorption isobar c) adsorption isostere

4- When there are no external forces, the shape of a liquid drop is determined by
(a) Surface tension of the liquid (b) Density of liquid (c) Viscosity of liquid (d) Temperature of air only

5- The rise of a liquid in a capillary tube does not depend upon
(a) Angle of contact (b) Density of the liquid (c) Radius of the capillary tube (d) Atmospheric pressure

6- At critical temperature, the surface tension of a liquid
(a) Is zero (b) Is infinity (c) Is the same as that at any other temperature (d) Can not be determined

7- Nacl dissolved (added) in to water than it surface tension is
(a) Decreases (b) Increases (c) Remains same (d) All of these

8- Excess pressure inside a soap bubble is
(a) Inversely proportional to its radius (b) Directly proportional to its radius
(c) Directly proportional to square roots of its radius (d) Independent of its radius

9-Point out the correct statement

(a) Freundlich equation is valid over a limited range of pressure. (b) The constants K and n vary with temp.

(c) Freundlich adsorption equation is purely empirical formula (d) All of the above

10- Surface tension may be defined as

(a)The work done per unit area in increasing the surface area of a liquid under isothermal condition

(b) The work done per unit area in increasing the surface area of a liquid under adiabatic condition

(c) The work done per unit area in increasing the surface is of a liquid under both isothermal and adiabatic conditions. (d) Free surface energy per init volume

II Answer the fllowing questions: (20 marks)

1- Write on the following:-1

a-The Ring method used for measuring surface tension .

b-The Kelvin equation and Kelvin effect.

2 why is surface tension of water greater than surface tension of oil.

3- Explain why water rises while mercury falls in a capillary tube.

4-.Determine the surface tension of ethyl alcohol if The density of ethyl alcohol is 0 .789 g/cm^{-3}and values of atomic parachor are of O=19.8,C=9.0,H=15.5

5-The adsorption of a gas on a solid surface was found to follow a Langmuir isotherm with $b = 3.76$ kPa^{-1} at a temperature of 25°C. Determine the pressure of gas required to achieve a fractional surface coverage of 10%.

Examiners : Prof. Dr. Esam Gomaa and Sohier Abd El- Hakam

المستوى الرابع - كيمياء وحيوان - كيمياء ضوئية كيمياء الأطياف (ك) (٤٣١)
كيمياء نبات

Mansoura University
Faculty of Science
Chemistry Department
Course(s): Photochemistry& Organic spectroscopy (CH 431)

First term
4th Year, Chem. Botany & Chem. Zoology Students.
Date : 17 / 01 / 2012.
Time Allowing : 2 Hours
Full Mark: 60

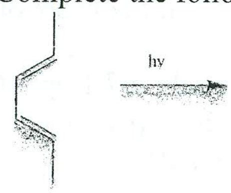
Answer the following questions

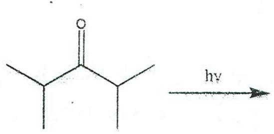
1.

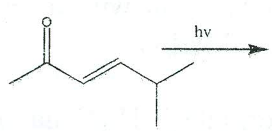
a) Write brief account on Jablonski diagram. (7.5 Marks)
b) Write short notes on Norrish type II for the photoreaction of carbonyl compounds and explain your answer by an example. (7.5 Marks)

2.

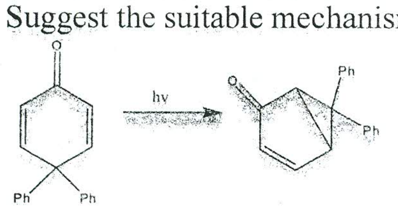
a) Complete the following photochemical equations. (7.5 Marks)

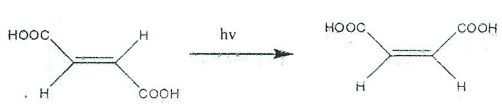
1) 

2) 

3) 

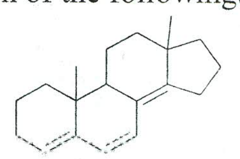
b) Suggest the suitable mechanism for the following equations. (7.5 Marks)

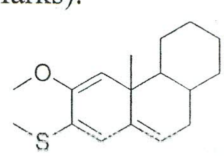
1) 

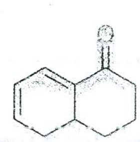
2) 

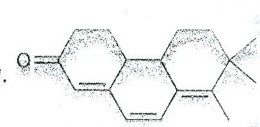
3.

a) Calculate λ_{max} for each of the following(5 Marks):

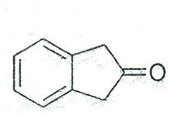
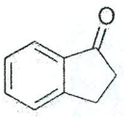
i. 

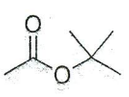
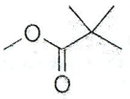
ii. 

iii. 

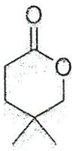
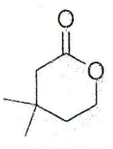
iv. 

b) How would you use ^{1}HNMR spectroscopy to distinguish between the following compounds (5 Marks):

i.  

ii.  

iii.  

iv.  

c) Illustrate with examples the observed fragmentation pattern in mass spectrometry of (5 Marks):

i. Alcohols. ii. Ketones.

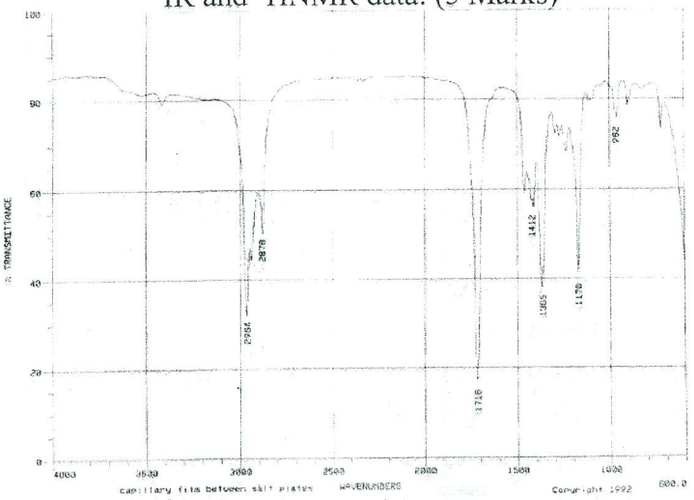
4.

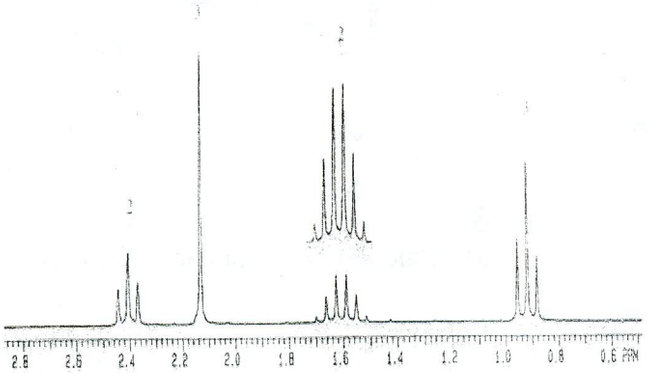
a) Deduce the structure of each of the following compounds on the basis of their ^{1}H NMR spectra and molecular formulas(5 Marks):

i. C_8H_{10}; δ 1.2 ppm (triplet, 3H), δ 2.6 ppm (quartet, 2H), δ 7.1 ppm (singlet, 5H).
ii. $C_{10}H_{14}$; δ 1.3 ppm (singlet, 9H), δ 7.0 to 7.5 ppm (multiplet, 5H).
iii. C_6H_{14}; δ 0.8 ppm (doublet, 12H), δ 1.4 ppm (heptet, 2H).
iv. $C_4H_6Cl_4$; δ 3.9 ppm (doublet, 4H), δ 4.6 ppm (triplet, 2H).

b) A compound with molecular formula $C_{10}H_{10}O_4$ produces a ^{1}H NMR spectrum that exhibits only two signals, both singlets. One signal appears at 3.9 ppm with a relative integration value of 79. The other signal appears at 8.1 ppm with a relative integration value of 52. Identify the structure of this compound. (5 Marks)

c) Predict the structure of a compound of molecular formula $C_5H_{10}O$ having the following IR and ^{1}HNMR data: (5 Marks)





Examenary

Prof. Dr. M. Abou-Elzahab

Dr. Saad Eldin Elaraby