Mansoura University

Faculty of Science

Chemistry Department

Courses(s): Chem. (323)

Biochemistry& Zoology

First-Term

Third Level

Date: 23/12/2013

Time Allowed: 2 hours

Full Mark: 80 Marks

1. a- Write the structural formula for each of the following complex and indicate the

    possible isomers: (10 Marks)

    i.   Hexaaquatitanium(III)chloride.

    ii. Pentaaminenitrocobalte(III)chloride.

    iii. μ-dihydroxobis(aminetrichloroiron(III)).

    iv. Potassium diaminetetrachloronickelate(II).

    v.   Tetraamine platinium(II)tetrachloroplatinate(II).

    b- Name the following complexes: (10 Marks)

    i. $Na[CrO_4]$

    ii. $[Co(NH_3)_4CO_3]NO_3$

    iii. $K_3[Fe(C_2O_4)_3].\ 3H_2O$

    iv. $[Cr(py)_2(H_2O)Cl_3].\ H_2O$

    v. $[(NH_3)_3Co-(OH)_3-Co(NH_3)_3]$

2. a- Give one example of the following: (10 Marks)

    i.   Neutral bridging ligand.

    ii. Neutral tridentate ligand.

    iii. Preparation of complex by substitution reaction.

    iv. A square planar complex with no dipole moment.

    v.   Monononegative bidentate ligand forming five membered ring.

    b- Complete the following sentences: (10 Marks)

    i.   A ligand may be an atom, ion or molecule which attached to the central metal

         atom by .... or .... bond.

    ii. Chelates rings are most stable when they have ...... or .... including the metal ion.

    iii. Compounds with the same .... but, different structural arrangements are called. . . .

    iv. Cations which serves best as centre for coordination are the ones with .... & ....

    v.   The ligand which forms .... with two metal atoms is called .... ligand.

Please turn out

3. a- **Complete the following sentences:** (10 Marks)

    i. Zr and Hf have nearly the same size due to ....

    ii. Many transition metals and their compounds have .... properties.

    iii. The rusting of iron is a special case of ...., where .... compound is formed, which can be prevent by .... and ....

    iv. The $[Mn(H_2O)_6]^{2+}$ complex has .... color, because d-d transition is ...., while, the $[Mn(CN)_6]^{4-}$ complex has .... color, because d-d transition is ....

    v. Cobalt is extracted from Co_3O_4 by .... reaction, while titanium is extracted from $TiCl_4$ by .... process.

b- **True and false (circulate the correct response) :** (10 marks)

    i. T – F V_2O_5 is amphoteric oxide.

    ii. T – F   Mn(IV) is more basic than Mn(VII).

    iii. T – F   Cobalt chloride used for detection of water or moisture.

    iv. T – F $[Fe(CN)_6]^{2-}$ complex is used for testing urine-sugar.

    v. T – F   Cr(III) acetate is a diamagnetic compound.

4. a- **Arrange the following according to the listed property:** (10 Marks)

    i. **Reactivity:** La , Sc , Y

    ii. **Size of atom:** Ti , V, Sc

    iii. **Melting point:** Hg , Cd , Cu

    iv. **Basic character:** VO , VO_2 , V_2O_3

    v. **Magnetic properties:** Ti^{3+} , Cr^{3+} , Sc^{3+}

b- **Complete the following reactions:** (10 Marks)

    i. $Sc + H_2 \rightarrow$ ....

    ii. $Mn + O_2 + \Delta \rightarrow$ ....

    iii. $TiO_2 + NaOH \rightarrow$ ....

    iv. $2 VCl_4 \rightarrow$ .... + ...

    v. $MnO_2 + HCl \rightarrow$ .... + ... + ...

Best Wishes
Prof. Dr. Magdy Bekhite
Dr. Ola A. El-Gammal
Dr. Rania R. Zaky

^{21}Sc	^{22}Ti	^{23}V	^{24}Cr	^{25}Mn	^{26}Fe	^{27}Co	^{28}Ni	^{29}Cu	^{30}Zn

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Answer the following **three** questions   Full mark   (80)

Q1- Choose the right answer of the following (30 Mark 2 for each)

1.   Ultimately, all of the energy in most food chains or food webs comes from ....
     A. the oceans B. the sun   C. the producers D. the carnivores

2.   The energy pyramid always shows a decrease moving up trophic levels because
     ....
     A. plants & animals expend energy for maintenance, less & less energy is made available
        through growth & reproduction to each higher trophic level
     B. the EE always shows an increase moving up torophic levels
     C. the kilocalories available in the bodies of the 3ry consumers are higher that the
        kilocalories that available in the bodies of the previous trophic level
     D. green plants (1ry producers) concedered the most productive trophic level. Herbivores
        are less productive & carnivores still less

3.   Corn ⟹   cow ⟹ Fox
     The food chain above shows ....
     A. one producer, one autotroph, and one decomposer
     B. one heterotroph and two autotrophs
     C. one autotroph and two heterotrophs
     D. one producer and two omnivores

4.   Which of the following is an example of an ecosystem?
     A. snake eating a frog
     B. tadpoles growing into frogs
     C. group of red-winged blackbirds
     D. pond

5.   Ecology is most accurately defined as the study of ....
     A. environmental problems, such as global warming and pollution
     B. predators, prey, and food chains
     C. the water cycle and other chemical cycles
     D. interactions between organisms and their non-living habitat

6.   If the current rate of burning fossil fuels continues, ...
     A. there will be many more areas of primary succession
     B. there will be decreased need for phosphorus
     C. the temperature of the atmosphere will increase
     D. photosynthesis will increase

7.   What word is another name for rain, snow, sleet, and hail?
     A. evaporation   B. artesian   C. eutrophication   D. precipitation

8.   The continuous movement of water from the oceans and freshwater sources to the air
     and land and back to the oceans is called the ....

     A. nitrogen cycle   B. runoff   C. water cycle   D. oxygen cycle
9.   The biosphere is the part of the .... that contains living things.
     A. atmosphere B. hydrosphere   C. lithosphere   D. all the answers
10.   .... Are a fundamental tool used worldwide for protecting the biome resources
      against a rising tide of human impact.
      B. Green house effect   B. Biodiversity   C. Protected areas   D. Ecology
                                       Please, follow the exam in the next page

11. A(n)............... is made up of all the populations in a given area
   A. Biosphere   B. community   C. habitat   D. Ecosystem
12. The term "nitrogen fixation" refers to ....

   A. the process that turns nitrates and nitites into nitrogen
   B. the process where bacteria turns nitrogen into a form that plants can use (ammonia)
   C. the process where nitrogen gas in the atmosphere is converted to nitrates
   D. none of the above
13. Which of the following is an abiotic factor in an ecosystem?
   A. bird   B. tree   C. rock   D. deer
14. Which of the following statements is true about matter & energy?
   A. Matter is recycled; energy is not recycled
   B. Both matter & energy recycled
   C. Neither matter nor energy are recycled
15. Which of the following is considered the main source of excess carbon dioxide in the atmosphere leading to the destruction of the ozone layer?
   A. Carbon gas released into the atmosphere from factories and cars
   B. CO_2 being relased from animals during the process of cellular respiration
   C. Carbon gas released into soil through the process of composition
   D. CO_2 released into oceans during deposition & decomposition

Q2- Describe the following: **(25 Mark 5 for each)**
   1. Ecological Roles
   2. Energy flow in the ecosystem
   3. Biodiversity& Egyptian fauna
   4. Ecological Efficiency
   5. Bioaccumulation & biomagnifications

Q3- Answer the following   **(25 Mark)**

   1. How is the phosphorus cycle different from carbon and nitrogen cycle?   (5 Mark)
   2. What are the characteristic adaptations specific to desert fauna like fox, camel, & snakes?
                                                                    (10 Mark)
   3. Mention the innovative and socioeconomic ideas that can we deal with based on the study of detritus food chain?   (10 Mark)

Good Luck

Dr. Zeinab Abou-Elnaga

Mansoura University
Faculty of Science
Zoology Department
Subject: Toxicology Z310

First Term
January, 2013
Date: 30/12/2013
Time: 2 hours

Final examination for 3rd level students, program Chemistry & Zoology.

Answer all the following questions

First question:

(A) Identify each of the following terms: [15 mark]

1. Biomarkers of risk.   2. Drug interaction.
3. Bioavailability.   4. Toxicodynamics.
5. Tolerance.

(B) Put (√) or (X), and correct the false sentences: [15 mark]

1. Metaplasia is a term refers to an abnormality of development of tissues or organs.

2. Phase I reaction may result in bioactivation of xenobiotic to a more toxic form.

3. An oncogene is a gene that protects a cell from one step on the path to cancer.

4. Most of phase II metabolism enzymes are water soluble.

5. In pinocytosis, the cell engulfs a portion of extracellular fluid containing solutes, so the process is not specific.

6. Two substances with equal toxicity and absorption may differ in hazard depending on the nature of their biotransformation.

7. Measurement of serum activity of creatine kinase is used for the early diagnosis of myocardial infarction.

8. Oxidation reactions involve addition of a hydroxyl group (R-OH) to an aromatic ring or aliphatic compound.

9. The acidic drugs are usually more readily absorbed from the upper regions of the gastrointestinal tract, where they are primarily in an ionized form.

10. Salicylates displace tolbutamide from its plasma protein binding sites leading to decrease tolbutamide toxicity.

Second question:

(A) Write short notes on each of the following subjects: **[30 mark]**

1. Role of CYP450 in oxidation of xenobiotics.

2. Types of phase II reactions.

3. Factors affecting membrane transport of chemicals.

Third question:

(A) Complete the following: **[10 mark]**

1. Oxidative stress markers such as ….......,…......were…..........in toxicity while antioxidants include…......,….......,…....,…............ were…...........during toxicity.

2. Biochemical toxicity deals with …........…..........…..meanwhile nutritional toxicity deals with…….....….....……..

3. …......…..........…..as food toxicity that induce …...…...............toxicity evidence by …........…...........parameters such as …......................…

4. Testicular toxicity result from-----------&-----------so we can used… ..…& ……….. as …......….....agents that improve----------------,--------------,-----------the biomarkers for fertility.

5. …...........…&…....…......…...as diabetic markers for nitrate toxicity.

6. …........….........act as markers for cadmium toxicity.

7. …........…......used to alleviate the hepatotoxicity induced by methotrexate.

8. Phthalate induces…...........…........toxicity and …......….........can used as a curative agent.

9. In aluminum toxicity,….....….. should be investigated as neural markers for toxicity.

11. Tomato juice acts as a protective agent against toxicity due to…...........…

12. Food additives such as…....…...........&…............…..can cause hematological change as evidenced by…...........….........

(B) Write a brief account on:

1. One of the application studies that you provided with it, and briefly give your opinion and your comment in the design of the experimental toxicity. **[5 mark]**

2. The protective agents that we can tested in experimental toxicology from your point of view. **[2 mark]**

3. The factors affecting toxicity (Mention the factors only). **[3 mark]**

مع تمنياتنا لكم بالتوفيق

Prof. Dr./ Hanaa Ali Hassan   Dr./ Faried Abdel-Kader

| Mansoura University		1st Term
Faculty of Science		3rd Level Students
Chemistry Department		Date: 26 / 12 / 2013
Subject: Chemistry		Time Allowed: 2 Hours
Course(s): Org.Chem.337		Full Mark: 80 Marks

Answer All Questions

1- Suggest the organic product(s):   [27 Marks]

i)   + $\xrightarrow{\text{heat}}$ ....

ii) $2CH_3COCH_2COOEt + CH_3CHO + NH_3 \longrightarrow$ .... $\xrightarrow{HNO_3}$ ....

iii)   + $CHCl_3$ $\xrightarrow{\text{NaOH}}$ ....

iv) $\xrightarrow{\text{alc. KCN}}$ .... $\xrightarrow{\text{[O]}}$ ....

v)   + PhLi $\longrightarrow$ ....

vi) $H_2C{=}\underset{H}{C}{-}CHO$ + NH_2NH_2 $\longrightarrow$ ....

vii) $\xrightarrow[\text{POCl}_3]{\text{DMF /}}$ .... $\xrightarrow[\text{reduction}]{\text{wolf-Kischner}}$ ....

viii) $\xrightarrow{\text{Me}_3CO^-}$ .... $\xrightarrow{H^+}$ ....

ix) $\underset{CH_2OH}{\overset{CH_2OH}{\mid}}CHOH$ +   + conc. H_2SO_4 $\longrightarrow$ .... $\xrightarrow{PhNO_2}$ ....
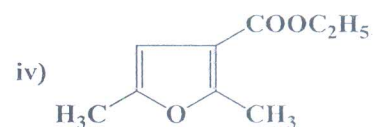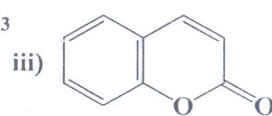
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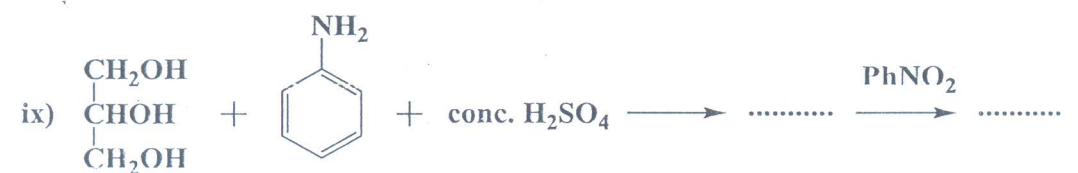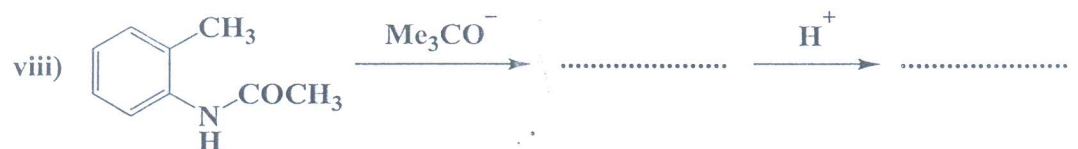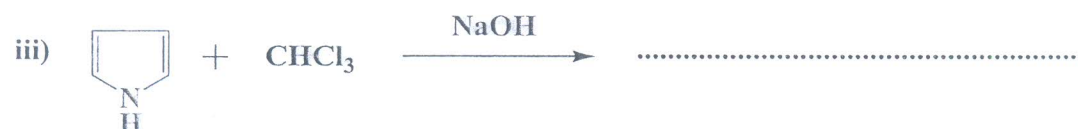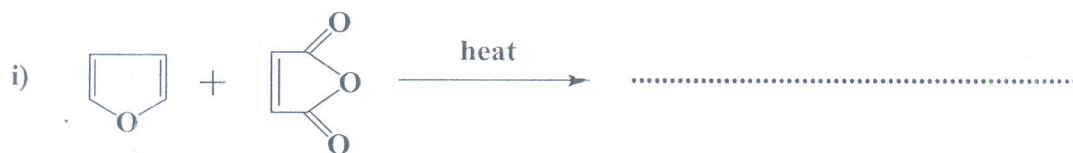
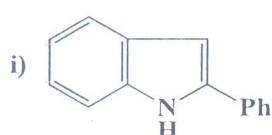2- a) Give acceptable name of each of these heterocycles: [8 Marks]

i)   ii)   iii)   iv)
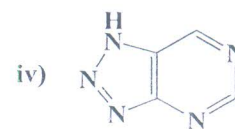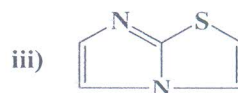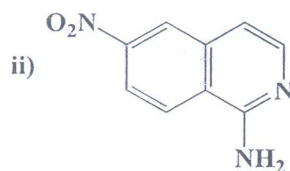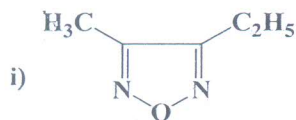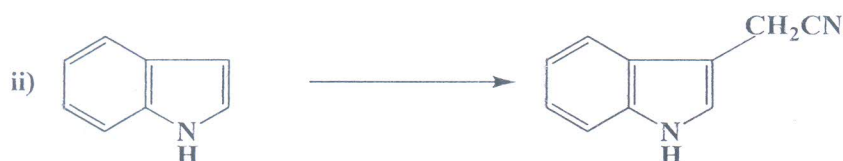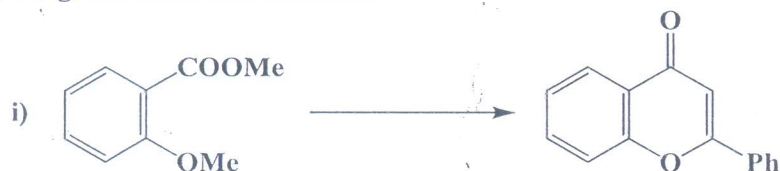
b) Design one synthesis for each of the molecules below: [18 Marks]

i)   ii)   iii)   iv)
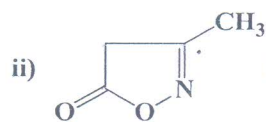
3- a) Diagram these conversions: [9 Marks]

i)

ii)

iii)

b) Show the following: [18 Marks]

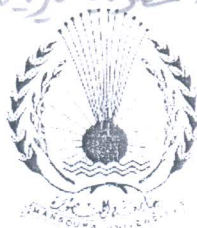   i) Conversion of pyridine to penta-1,3-diene

   ii) Preparation of saccharine

   iii) Pictet-Spengler synthesis of isoquinoline

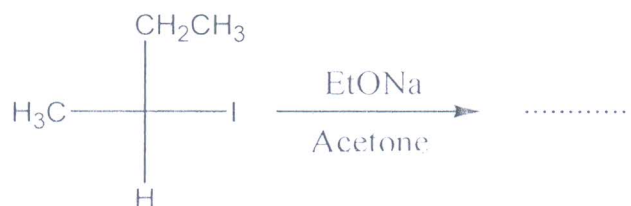   iv) Paal-Knorr synthesis of pyrrole

Best Wishes and Good luck

Examiners: Prof. Dr. Ez Kandil,   Prof. Dr. Evelin Boshra,
A.Prof. Dr. Eman Keshk

Mansoura University
Faculty of Science
Chemistry Department
Subject: Organic Chemistry
(Chem 336)

First Term
3th Year: Chemisry & Zoology Students
Date: Dec. 2013
**Time allowed: 2 h**
Total Marks: 80 marks

Answer the following questions:

1- Considering the following reaction: [26 marks]

i) Complete the above reaction with assigning the stereo-chemical configuration (R/S) of both reactant(s) and product(s).

ii) Write the rate law equation

iii) What is the effect of raising the EtONa concentration on the rate of the reaction?

iv) What is the effect of lowering the concentration of 2-iodobutane on the rate of the reaction?

v) What is the expected change on the mechanism and the product(s) of the reaction if the solvent acetone changed to be ethanol?
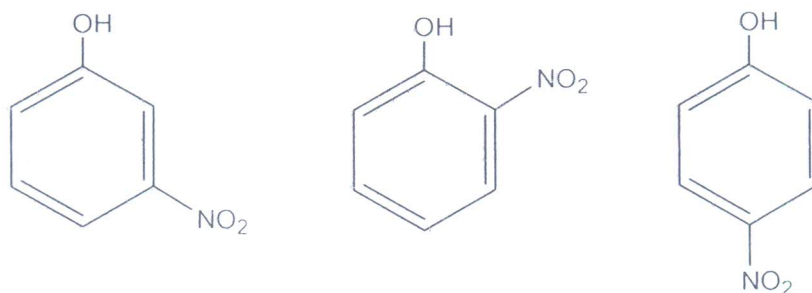
2- i) Arrange the following according to the reactivity toward S_N^1 (Explain with reasons): [14 marks]
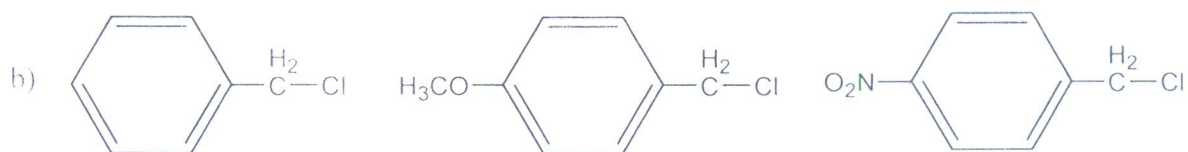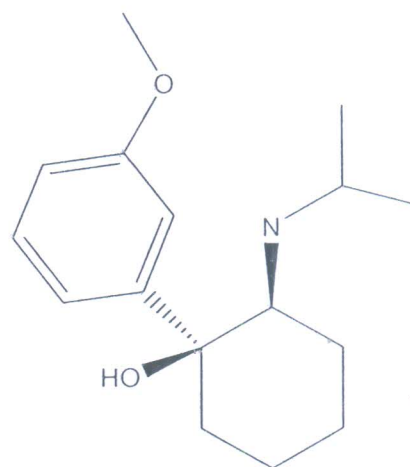

ii) Suggest a suitable mechanism for the following reaction: [13 marks]

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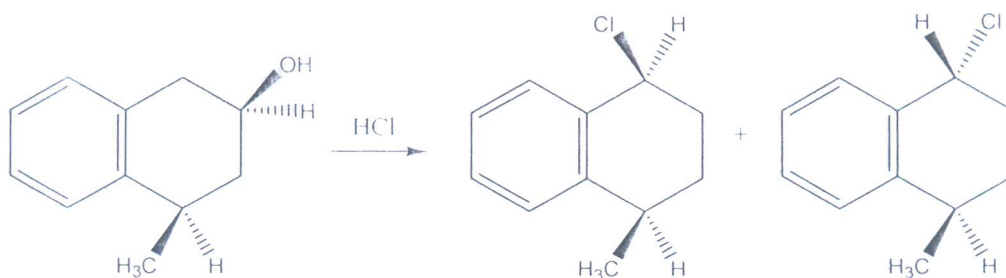
3- i) Rank the following in order of increasing pK_a value (Explain with reasons). [9 marks]

ii) Ultramal (A), which is commonly known as Tramadol is a commonly used drug affecting the CNS. Assign all the chiral carbons by * and draw the enantiomer. [9 marks]

(A)

iii) Indicate which of the following compounds are aromatic or not aromatic. [9 marks]

(a)   (b)   (c)

Mansoura University
Faculty of Science
Zoology Department
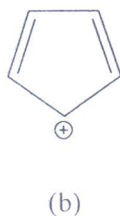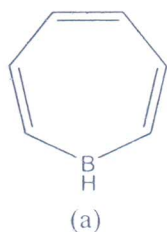
Final Exam, Jan. 2014

Education year: Third level   Program: Chemistry / Zoology
Time: 2 hours   Subject: Zoology
Date: 9/ 1/ 2014   Course: Embryology
                                     Full Mark: 60

Answer all the following questions:

Q1) a- Rewrite *14 sentences only* in your answer sheet after correction:(14) Marks

1- In chick embryo 33 hours, the closure of neural tube continues until ………
     a- 10th somite   b- 13th somite   c- 20th somite

2- Hensen's node of the primitive streak in birds is resembled to the amphibian.......
     a- blastopore   b- blastocoel   c- neurocoel

3- Gastrulation of birds has been taken by ……………… formation.
     a- hypoblast only   b- primitive streak only   c- both of them

4- fertilization of birds possesses a phenomenon called ....
     a- aspermia   b- dispermia   c- polyspermia

5- The primary optic vesicles arise as dialations in the lateral walls of ………., in chick embryo about 33 hours.
     a- Prosencephalon   b- mesencephalon   c- rhompencephalon

6- The thickening of cells at the anterior end of the primitive streak is called….
     a-Koller's sickle   b- Hensen's node   c- blastopore

7- Flexure of head is a phenomenon clearly appeared in chick embryo of …….
     a- 24 hours   b- 33 hours   c- 48 hours

8- In birds, ……….. forms portion of stalk linking the yolk mass to the endodermal digestive tube.
     a- ectoderm   b- hypoblast   c- mesoderm

9- The primitive streak is the major structural characteristic of gastrulation in……..
     a- birds only   b- reptiles only   c- birds & reptiles

10- The first heart beat of chick embryo starts about .... hours.
     a- 33   b- 29   c- 25

11- The hypoblast cells will form the extra embryonic…..........
     a- ectoderm   b- Koller's sickle   c- endoderm

12-In bird's embryo, Koller's sickle is referring to the ……………… end.
     a-anterior   b- middle   c- posterior

13- The maximum elongation of the primitive streak toward the future head region occurs at ……… of incubation.
     a- 13 hours   b- 16 hours   c- 20 hours

14- The bird's embryo proper comes entirely from……………
     a- epiblast   b- hypoblast   c- both of them

15- The first cells migrate deeply through Hensen's node are destined to become …
     a- endoderm   b- endoderm of the fore gut   c- mesoderm

Q1) b- Give one reason for the happenace of each of the following: (6) Marks
   3- The anterior end of foregut of chick embryo 20 hours is closed .
   2- In Chick embryo 48 hours, the mesencephalon is located at the anterior cranial part.
   3- The anterior part of the body of chick embryo 48 hours lies with its left side on the yolk.

Q2) a- Discuss briefly with adding labeled diagram in ONE only of the following: (10) Marks
   5- General characters of chick embryo 48 hours incubation.
   6- The steps of gastrulation of the Bird's embryo.
Q2) b- *Write short note, with labeled diagram:*
   1- Development of eye in amphibian.   (8) marks
   2- Development of olfactory organ in amphibian.   (6) marks

Q3) a- *Choose the correct answer:*   (10) Marks

1- In the development of amphioxus, the strip of cells lying mid –dorsal region rounds becomes a cylindrical cord of cells is ……….
        a) neural tube   b) notochord   c)ectoderm
2- In the amphioxus development, the cavity of mesodermal   segment is come from……
        a) archentron   b) blastoceal   c) coelom
3- In amphibian development , the external layer of lateral plate mesoderm applied to the ectoderm known as……..layer.
        a) visceral   b) parietal   c) not a or b
4-The invaginated wall of the optic cup is much thicker and well develops into the……….
        a) pigment coat   b) sensory retina   c) optic nerve
5-The coelomic cavities expand in the heart region from ……..
        a)coelom   b)pericardial cavity   c)heart cavity

6-The triangular area in the anterio- ventral region of amphibian embryo free of ….
        a)endoderm   b)mesoderm   c)both of them
7- In heart development , the mesodermal cells differentiate into cardiac muscle capable of ……….
        a) differentiate   b) regenerate   c)autonomous rhythmical contraction

8- In heart development the……….develop at the tip of the first inflection
        a) ventricle   b)conus arteriosus   c)atrium
9- In eye development the thickening in epidermis separate to form……..
        a) iris   b)retina   c)lens
10- Sensory organ derived from………
        a)mesoderm   b) endoderm   c)ectoderm

Q3) a- Give definition of the following: (6) marks

Fat map- chordomesodermal mantel- invagination.

....
   With our best wishes ……………….. Dr. Manal Ramadan, Dr. Heba EL-Ghawet

Mansoura University **Faculty Of Science** **Chemistry Department** **Subject : Analytical Chemistry** **Course(s): 314 C.**		**3th. Year Botany, Micro** **Bio & Zoology/ Chemistry** **Program: Chemistry** **Date: 16-Jan 2014** **Time Allowed: 2 Hours** **Full Mark: 60Marks**

Answer The Following Questions

Section a (30 Marks)

a)*Define only 5 of the following*: (10 Marks)

1-R_f 2-$K_{d.}$ & α 3-H (height equivalent to theoretical plate)
4-D_c (distribution a ratio) 5-D_v , V_{max} 6- Affinity Chromatography

7-Gel Chromatography .

c) *Write short notes on   only one of the following (5 Marks)* :

1-Application of ion exchanger chromatography, its fundamental requirements, types. What is meant by separation factor and capacity?

2-Types of Paper – thin- layer chromatography , its Detectors .

d) One gram of benzoic acid originally dissolved in 100 ml of water is to be equilibrated with 100 ml of ether . K_d is 100 , K_a is 6.5×10^{-5} . Calculate the D at

pH3, 5 , 9. *(5 Marks)*

e) Three analysts were separated on a column of 3 cm length at 0.5, 0.6 and 0.65 minutes with 3, 2 and 5 sec beak widths, respectively. Calculate n , H, and R. Comment on the results. (5 Marks)

f)-Give illustrative figures for GC or HPLC and discuss the detectors used in each *(5 Marks)*.

Good Luck Prof.. Dr. A. El-Wakil & I. Kenawy.

Volumetric and Gravimetric Section (30 marks)

Q3- (15 marks)

a) In the Titration of 50 ml of 0.1M HCl with 0.1M NaOH .Calculate the pH of the solution after the following additions , 0.0 ,10.0 ,50.0 and 60.0 ml of the base .

b) Calculate the Ksp value for Ag_2CrO_4, its solubility 2.5×10^{-2} g/l (Mol.wt. =322).

c) Find the molarity of 1.4g/l HCl .

Q4-(15marks)

a) Discuss the following (Choose three only)

   i)   Nernest Equation in Oxidation Reduction Reactions.
   ii) Metallic indicators in EDTA titrations.
   iii) Q-Test for analytical data.
   iv) Peptization in gravimetry .
   v) pH- range in acid base indicator .

b) Put (V) or(X) on the following statements and explain why:

  i) $KMnO_4$ is a self indicator in $KMnO_4$ titrations.

  ii) The M-indicator complex must be more stable than M-EDTA complex in complexometric titration.

  iii) Mohr method must be carried out in acidic medium in precipitation titrations.

c- Explain how Ca^{2+} and Mg^{2+} are determined in drinking water sample by EDTA titration.

Answer the following questions:

Question 1:

a- Explain (4 only) of the following sentences: **[12 Mark]**

1-Changes in secretion of some hormones lead to growth retardation.

2-Bone metabolism is hormonally controlled.

3-Some non-endocrine organs have hormone section activity.

4-Negative feedback control mechanism(give one example).

5-Cortisol has different pharmacological actions .

b- Write on 2 of the following items : (10 mark)

a- follow up the steps of glycogenolysis

b- Elucidate the meeting points of charbohydrate and protein metabolism

c- Explain one of the following expressions :

- Higenergy energy phosphate compounds

- Ketosis

- trans amination

Question 2:

Complete (9 only) of the following   **[18 Mark]**

1-Gestational diabetes occurs as a result of ………&is characterized by……

2- Glycoprotein hormones consist of………….. & their examples are ……………………, …………

3-………… hormones exert their action inside target tissues because …………………………

4-Decreased secretion of thyroid hormones causes………………in adults &…………in youngs.

5-Oxytocin is important for………………………in males &……………...in females.

6-Laron dwarf occurs as a result of………………,while dwarfism occurs due to…………

7-Antidiuretic hormone is responsible for…………..& its decreased secretion causes…………………

8- ……………………,…………….. are polypeptide hormones consisting of ……………. amino acids.

9- Increased secretion of catabolic hormones lead to…………blood glucose level; they includes,……………,………………

10- Somatostatin is secreted from………,…………..& is important for inhibiting secretion of…………,&………………..

Question 3:

Answer the following questions: (20 mark)

- Account for 3 of the following items :

a – Two irreversible reactions .

b-The physiological importance of hexose mono phosphate shunt

c- Calculate no of ATP molecules released from B –oxidation of fatty aced containg 20 C atom.

d – Draw a diagram for urea formation .

Prof. Dr. Azza El-Wakf   Prof. Dr. Wafaa El-Kholy

Mansoura University Faculty of Science Maths department Subject: Biostatistics (R301)		Exam: Jan 2014 Third Year Programs * Date : 23 – 1 - 2014 Time allowed :2 hours

*كيمياء و حيوان – فيزياء حيوية – ميكروبيولوجى – كيمياء و نبات – علوم بيئة.

Answer the following questions

1-   a - The following table shows the age distribution of patients   (21 Marks)

Age	22-24	25-27	28-30	31-33	34-36
No. of pat	3	8	12	5	2

Calculate: i- median   ii- standard deviation   iii- mode

b- If X has binomial distribution with mean 4/3 and standard deviation $2\sqrt{2}/3$
Find $P(X \geq 2)$.   (5 Marks)

[2]- a- A random sample with $\sum_{i=1}^{40} X_i = 280$ and $\sum_{i=1}^{40} X_i^2 = 2100$. Construct 98%

confidence interval for the population mean.   (10 Marks)

b- If X is a random variable has the density function   (10 Marks)

$$f(x) = \begin{cases} 3x^a & 0 < x < 1 \\ 0 & otherwise \end{cases}$$

Find   1- Constant a.   2- Distribution function.   3- Variance.
       4- $P(0 < X < 0.5)$, $P(0.6 < X < 4)$, $P(X = 0.3)$, $P(X > 0.1)$.
c- A sample of size 64 is drawn from a population with mean 3.2 and standard
deviation 1.6 Find the probability that the sample mean will be
      1- more than 3.5   2- less than 2.7   (10 Marks)

[3] a- If $\overline{X} = 16$, $\sum_{i=1}^{n} X_i^2 = 6640$ and $S^2 = 10$, Find n.   (4 Marks)

b- If X has Poisson distribution with $P(X = 0) = P(X = 1)$. Find
    1- $P(X \geq 4)$.   2- $P(X < 1)$.   3- mean and variance.   (10 Marks)
c- A random sample of size 16 has mean 32.8 and standard deviation 4.51,
Construct 95% confidence interval for the population mean.   (10 Marks)

$Z_{0.01} = 2.33$, $Z_{0.025} = 1.96$, $t_{16, 0.025} = 2.145$, $t_{15, 0.025} = 2.131$, $\phi(1) = 0.8413$, $\phi(1.5) = 0.933$, $\phi(2.5) = 0.9937$.

Best wishes   Dr. Noura Fakhry. Dr. Mohamed Abd El-Rahman.