جامعة المنصورة – كلية العلوم
قسم الرياضيات
التاريخ : ٢٥ / ١٢ / ٢٠١٢ م
الدرجة الكلية : ٨٠
الزمن : ساعتان

امتحان دور يناير ٢٠١٣م
برنامج : *
المستوى:الثالث
اسم المقرر : احصاء حيوى
كود المادة : ر ٣٠١

Answer the following questions:

[1] a- A random sample of 100 patients is selected and treated by a new drug for AIDS. After 8 weeks, 20 of them show signs of improvement. Find a 99 % confidence interval for the true proportion of all patients treated by this new drug and show improvement after 8 weeks. (10 Marks)

b- Suppose that in a certain city , the probability that a man has high blood pressure is 0.18 If we randomly select 10 men from this city .

i) Find the probability that exactly 3 men have high blood pressure

ii) Find the expected number of men with high pressure (10 Marks)

[2] a- A Coin is tossed 4 times , let X denotes the number of heads occurs . Find

i) $P(X=3)$ ii) $E(X)$ iii) $Var(X)$ (10 Marks)

b- A sample of size 64 is drawn from a population with $\mu = 3.2$ and a standard deviation $\sigma = 1.6$. Find the Probability that the sample mean will be

i) more than 3.5 ii) less than 2.7 (10 Marks)

c- In a certain population, suppose that the number of deaths per year from cancer has a Poisson distribution with average 6 Find the probability that in a year there are

i) Exactly 4 deaths ii) Less than or equal two deaths (10 Marks)

[3] The following table shows the age distribution (in years) of 76 patients who complained of flu. (30 Marks)

Age	5.5 – 10.5	10.5 – 15.5	15.5 – 20.5	20.5 – 25.5	25.5 – 30.5	30.5 – 35.5
frequency	6	10	20	22	13	5

Find i) The sample Mode ii) The sample median iii) The sample variance

$\varphi(1.5) = 0.933$, $\varphi(-2.5) = 0.0062$, $t_{(0.025,8)} = 2.306$, $t_{(0.025,9)} = 2.262$

$Z_{0.005} = 2.58$, $Z_{0.025} = 1.96$

* برامج : كيمياء و حيوان - فيزياء حيوى - ميكروبيولوجى – كيمياء ونبات – علوم البيئة

مع أطيب التمنيات بالنجاح د. فاتن شيحه – د. نورا فخرى

Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Chem.336 Physical Organic Chemistry		First Term 3rd Level Biochem, Zoology and Botany/ Chem. Students Date: December 31, 2012 Time Allowed: 2 Hours Full Mark: **80** Marks

Answer All Questions

Questions 1 (20 marks)

Answer the following questions. Write short comment about your answer:

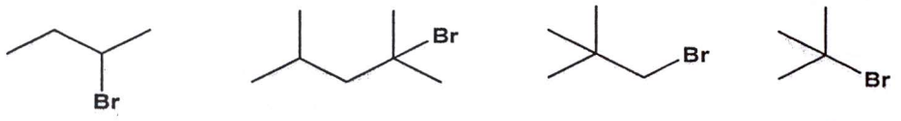
A) Rank the following compounds in order increasing the rate of solvolysis (SN^1) in aqueous acetone (slowest ⟶ fastest).

$(CH_3)_2CHCH_2CH_2Br$ b; $(CH_3)_2CHCH(Br)CH_3$ c; $(CH_3)_2CHCH(Br)C_6H_5$

B) The number of possible dichloronitrobenzene isomers is?

a; 3 b; 4 c; 6 d; 8

C) Which of the following alkyl halides would be most likely to give a rearranged product under SN^1 conditions.



(a) (b) (c) (d)

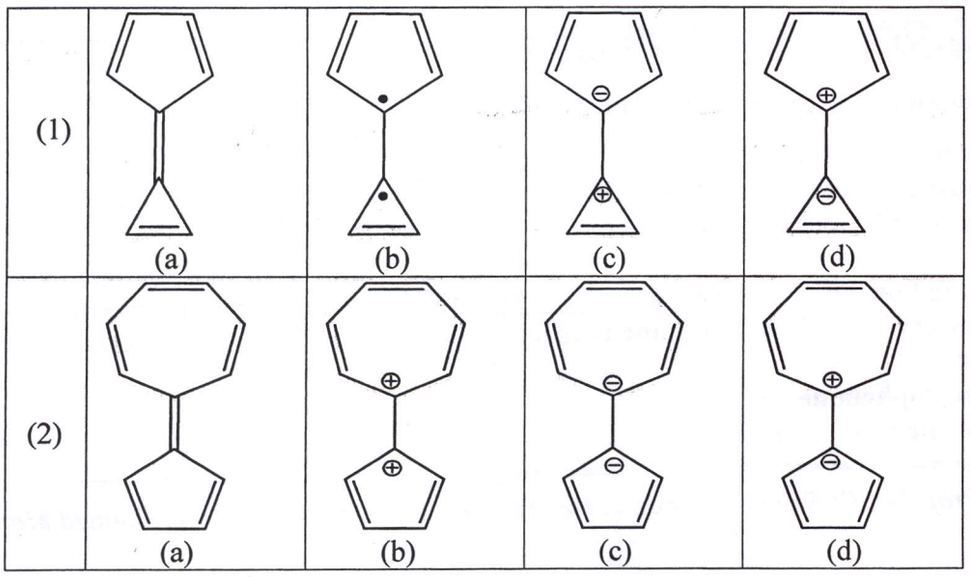
D) Which of the following statements pertaining to an SN2 reaction are true?

1. **The rate of reaction is independent on the concentration of the nucleophile.**
2. **The nucleophile attacks carbon on the side of the molecule opposite the group being displaced.**
3. **The reaction proceeds with simultaneous bond formation and bond rupture.**
4. **Partial racemization of an optically active substrate results.**

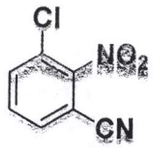
(a) 1,4 (b) 1,3,4 (c) 2,3 (d) All of them.

Questions 2 (20 marks)

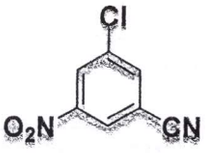
A) In each of the following isomeric sets, select one should be the top of stability. Mention the reasons? (10 marks)



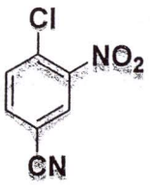
B) Arrange the following in order of their reactivity towards NaOMe? Explain the suitable mechanism for one of them?



1



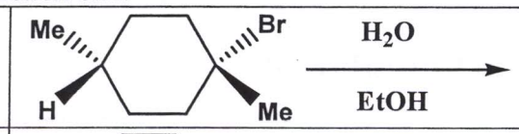
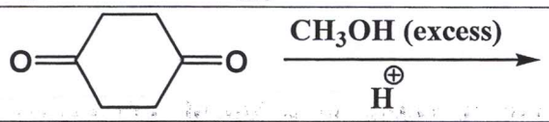
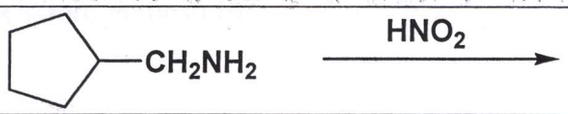
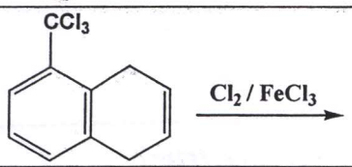
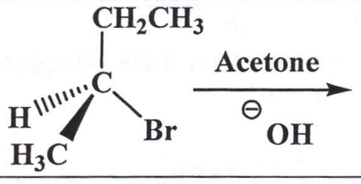
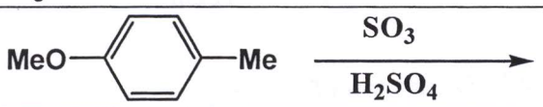
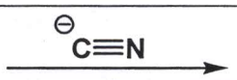
2



3

Questions 3 (20 marks)

1- Write the major product(s) of <u>five only</u> from the following reactions. Explain the suitable mechanism for each one.

a;	
b;	
c;	
d;	
e;	
f;	
G;	*p*-methoxybenzaldehyde 

Questions 4 (20 marks)

A; Write shortly what you know about <u>two only</u> of the following: (10 marks)

a; Conjugation (mesomeric) and Hypercojugation effects.
b; The effect of substrate structure on both SN^1 and SN^2 reactions.
c; Orientation of monosubstituted benzene.

B; Write equations showing how you could prepare <u>two only</u> of the following compounds from benzene and any necessary organic or inorganic reagents (10 marks)
a; Cyclohexyl benzene.
b, 3-bromo-4-methylacetophenone
c; 2-bromo-4-nitrobenzoic acid

With our best wishes *Prof. Dr. El-Sayed El-Desoky, Dr. Ahmed El-Mekbaty and Dr. Mohamed Monier*

Mansoura University
Faculty of Science
Zoology Department

First Term Exam, Jan. 2013

Education year: Third level | **Program: Chemistry/ Zoology**
Time: 3 hours | **Subject: Zoology**
Date: 10/ 1/ 2012 | **Course: Embryology**
Total Mark: 60

.....

Answer the following questions:

Q1) A- By the aid of labeled diagrams, describe (1) OR (2): (9 marks)

1- The modification which occur in the development of respiratory organ of frog from the embryo to adult.
2- The modification which occur in the development of heart of frog from the embryo to the adult.

B- By use simple drawing write briefly on the urinogenital system of frog. **(6 marks)**

Q2) A- Choose the correct answer of the following: (7 marks)

1- During the development of birds, …….. forms the stalk of the yolk sac.
a- ectoderm b- hypoblast c- mesoderm

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

3- Polyspermy is a phenomenon occurs in ……
a- Amphipians b- Birds c- Mammalians

4- While the ovum of birds is passing through the glandular portion of oviduct, the dense-albumen twisting to form ……..
a- chalazae b- shell-membrane c- calcareous shell

5- The kidney of vertebrates is derived from ……. mesoderm.
a- intermediate b- chorda c- paraxial

6- Primitive streak of birds is resembled to the amphibian.....
a- blastopore b- blastocoel c- neurocoel

7- K0ller's sickle is referring to the …… end of Bird's embryo.
a- anterior b- middle c- posterior

B- Write briefly on the general characters of chick embryo 33 hours incubation with a labeled diagram. (8 marks)

Q3) Report on the following: **(15 marks)**

a- The formative movement of toad.

b- The unfertilized egg of toad and fertilized egg.

c- The presumptive map of toad.

Q4) Give short note on THREE of the following, by adding a labeled diagram: **(15 marks)**

1- Formation of the tubal heart of chick from 25 – 29 hours.

2- Formation of the embryonic developmental stages of early larva of amphioxus.

3- Show the different derivatives of mesoderm in vertebrates.

4- The hypoblast formation of bird's embryo.

With our best wishes ..... Prof. Dr. Mohamad Hasan

Dr. Manal Ramadan

المستوى الثالث - كيمياء حيوية - الفصل الدراسي الأول ٢٠١٣
الكيمياء الحيوية

Mansoura University
Faculty of Science
Chemistry Department
Course(s): (323) Biochemistry, Botany and Zoology Programs

First Term, Level Three.
Date : 10 January 2013
Time Allowed : 2 hours
Full Mark : 80 Marks

ANSWER THE FOLLOWING QUESTIONS

1) a- Complete the following sentences: *(15 Marks)*

i- *d*-Block elements are often called ------ because their position in the periodic tables in between the *s*-block and *p*-block elements.

ii- The covalent radii of the elements ------ from left to right across a row in the transition series, until near the end when the size ------ slightly.

iii- The melting and ------ points of the transition elements are generally ------.

iv- The color of a transition metal complex is dependent on ------

v- ------ arises as a result of unpaired electron spins in the atom.

vi- The permanganate $[MnO_4]^-$ is a strong ------ agent.

vii- The coordination number ------ is the most common in the transition metals complexes giving an ------ structure.

viii- The coordination number ------ is much less common in the transition metals complexes giving ------ structure.

ix- ------ is the fourth most abundant element by weight, Ti the ------ and Mn the twelfth.

x- The second and ------ row elements are much ------ abundant than the first row.

b- Chose the correct answer: *(5 Marks)*

i- Oxyanion VO_4^{3-} is ------ **(tetrahedral or octahedral)**

ii- The molar conductivity of $[CoCl(NH_3)_5]Cl_2$ is ------ **(electrolyte or nonelectrolyte)**

iii- Square planar $[Ni(CN)_4]^{3-}$ complex ion has ------ magnetic moment. **(paramagnetic or diamagnetic)**

vi- The linear $[Cl\text{-}Au\text{-}SCN]^-$ complex ion has ------ isomerism. **(geometric, linkage, coordination)**

v- The $[Co(NH_3)_4(H_2O)_2]^{2+}$ complex ion has ------ geometrical shape. **(octahedral, tetrahedral, square planar)**

vi- The $[Co(NH_3)_5NO_2]Cl_2$ complex has ------ isomerism. **(linkage, Coordination, Geometric)**

c- Give only **<u>one method</u>** of the extraction of **Vanadium** metal from its ores. *(5 Marks)*

2) a- Name the following complexes and indicate <u>the possible isomers</u>: *(15 Marks)*

i- $[Ti(H_2O)_5Cl]Cl_2$

ii- $[Cl_2(NH_3)_2Mn\text{-}(OH)_2\text{-}Mn(NH_3)_2Cl_2]$

iii- $[Co(NH_3)_6][Cr(C_2O_4)_3]$

iv- $[Ni(PPh_3)_2Cl_2]$

v- $[Mn(CN)_6]^{4-}$

vi- $[CoCl_2(en)_2]^+$

b- Write the structural formula of the following compounds: *(10 Marks)*

i- Dichlorobis(triphenylphosphine)nickel(II).
ii- Tris(ethylenediamine)chromium(II) bromide 4-water
iii- Sodium tetraoxochromate(VI).
iv- Tetramineplatinium(II) tetrachloroplatenate(II).
v- Pentaminenitritonickel(II) ion.

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

i- $MnO_2 + HCl \rightarrow$ ..... + ...

ii- $FeCr_2O_4 + C \xrightarrow{\text{electric furance}}$ - - - - - + - - - - - + - - - - -

iii- $Sc + NaOH \rightarrow$ ..... + ...

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

v- Ti + Conc. $HCl \rightarrow$ .....

b- Give one example of the following ligands: *(10 Marks)*

i- Binegative bidentate ligand.
ii- Neutral bridging ligand.
iii- Neutral bidentate ligand form five membered ring.
vi- Tridentate ligands.
v- Ambidentate ligands.

c- True and false (circulate the correct response): *(10 Marks)*

i- *T – F* Vitamin B_{12} contains Co(II) complex.
ii- *T – F* Mn is prepared by electrolysis in aqueous solution.
iii- *T – F* Van Arkel method used Mg for preparation of metals.
iv- *T – F* TiO_2 is amphoteric.
v- *T – F* Fe rusts slowly in air in presence of humidity to Fe_2O_3.
vi- *T – F* Four series of transition elements are formed by filling the *3d, 4d* and *5d* shells of electron.
vii- *T – F* Ni is much more reactive than Pd.
viii- *T – F* Mn(IV) is more basic than Mn(VII).
ix- *T – F* V_2O_5 is amphoteric oxide.
x- *T – F* Ti is smaller in size than V.
xi- *T – F* Hemoglobin contains Fe.(II)

Best Wishes

Prof. Magdy Bekheit
Prof. Nagwa Nawar
Dr. Ahmed Lutfi

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

المستوى الثالث . كيمياء بنات - كيمياء صيدلة - ميكروبيولوجي

ك ٣١٤ التحليل الحجمي والوزني طرق الفصل الكروماتوجرافي

Mansoura University
Faculty of Science
Chemistry Department
Subject: Analytical Chemistry
Course: Chromatography,Volumetry and Gravimetry ......
Course code: 314 ....

3rd level general Chemistry students)
Date:14-1-2013
Time allowed: 2 hours
Full Mark:60 Marks

Answer the Following Questions

Chromatography :

1- In quantitative analysis in Gas Chromatography discuss the following :
   a- Normalizing peak area for determination of percentage composition of each component in the mixture .
   b- Procedure using peak area measurements and calibration curve For the quantitative analysis by GC. **(10 marks)**

2- What is the electron capture detector ? Explain its basis for operation , what types of species (analytes) are detected with (ECD) **(5marks)**

3- How Number of plates ,Height equivalent to theoretical plates and Resolution are determined from the chromatogram . Discuss the important of these measurements in chromatography. **(10 marks)**

4- Whate are the types of capillary column in GC . **(5 marks)**

Volumetry and Gravimetry:

5 a-Define **only 3** of the following: **(6 marks)**
   i- Acidbase indicators ii-Normality iii- Buffer solutions
   iv- Coprecipitation v- Peptization

b-Titrating a 50.0 ml water sample for total hardness requires 4.08 ml 0.01 M EDTA. Calculate the hardness of the water as mg/l (ppm) calcium carbonate. **(4 marks)**

c- A concentrated solution of aqueous ammonia is 28.0% w/w NH_3 and has a density of 0.899 g/mL. What is the molar concentration of NH_3 in this solution? **(4 marks)**

إقلب الصفحة .....

6-a-Write shortly on **only 2** of the following: **(8 marks)**

i- Compaire between Mohrs' and Fajan's method in argentometric titration.

ii- Compaire between $KMnO_4$ and $K_2Cr_2O_7$

iii- Requirements for succeful gravimetric analysis.

b- A buffered solution contains 0.5M acetic acid ($HC_2H_3O_2$, $K_a = 1.8x10^{-5}$ and 0.5M sodium acetate ($NaC_2H_3O_2$). Calculate the pH of this solution. **(4 marks)**

c-5.0 ml of 0.10M Ce^{4+} solution is added to 5.0 ml of 0.30M Fe^{2+} solution. Calculate the potential of a platinum electrode dipped in the solution relative to NHE. E $Ce^{4+}/Ce^{3+} = 1.61$, E $Fe^{3+}/Fe^{2+} = 0.771$ **(4 marks)**

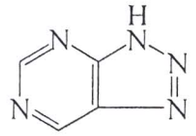
with our best wishes

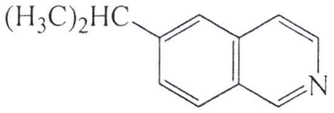
prof.Dr. M.El-Defrawy and Dr. Y.Abo-riesh

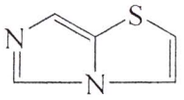
Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Org.Chem.337		1st Term 3rd Level Students Date: 21 / 1 / 2013 Time Allowed: **2** Hours Full Mark: **80** Marks

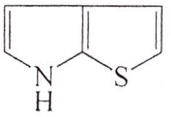
Answer All Questions

1- a) Give acceptable name of each of these heterocycles: **[8 Marks]**

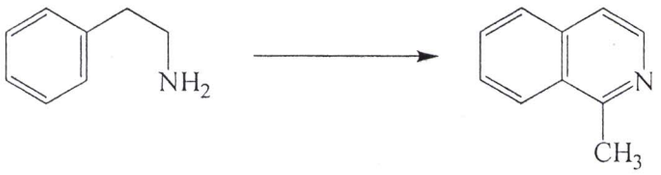
i) 

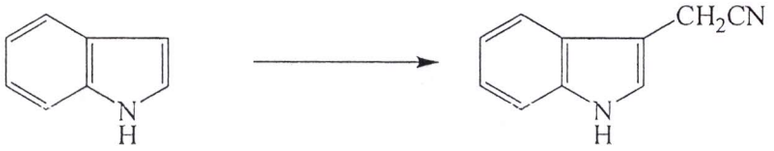
ii) 

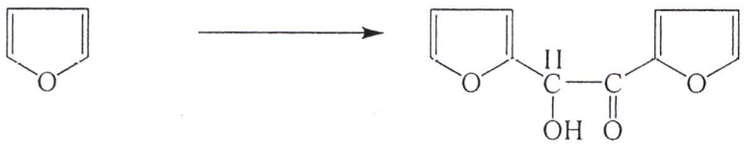
iii) 

iv) 

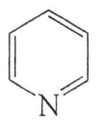
b) Diagram these conversions: **[18 Marks]**

i) 

ii) 

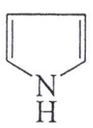
iii) 

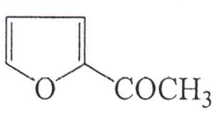
2- Complete these reactions: **[27 Marks]**

i)  + $NaNH_2$ ⟶ .....

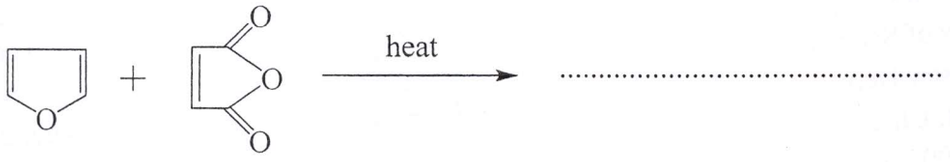
ii) $H_2C{=}\underset{H}{C}{-}CHO$ + NH_2NH_2 ⟶ .....

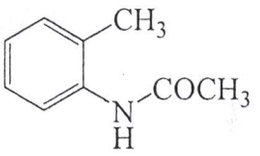
iii) $CH_3COCH{=}CHCH_3$ + NH_2OH ⟶ .....

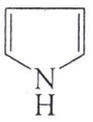
iv)  + CH_2O $\xrightarrow{K_2CO_3}$ .....

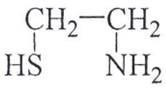
v)  + NH_3 ⟶ .....

P. T. O.

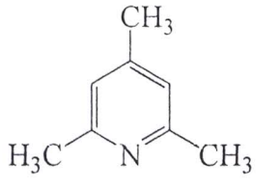
vi)  heat .....

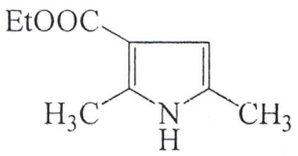
vii)  Me_3CO^- ..... H^+ .....

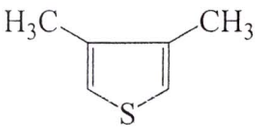
viii)  + $CHCl_3$ NaOH .....

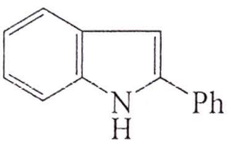
ix)  HCOOEt ..... P_2O_5 .....

3- a) Design one synthesis of each of the molecules below: **[15 Marks]**

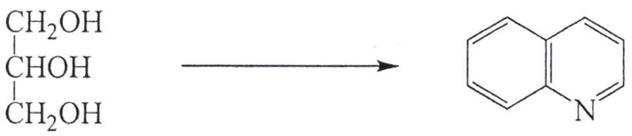
i) 

ii) 

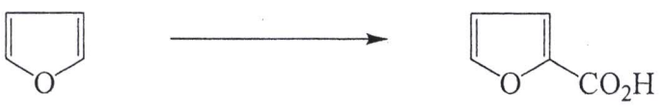
iii) 

iv) 

b) Diagram the following: **[12 Marks]**

i) 

ii) 

iii) 

Best Wishes and Good luck

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

الفرقة الثالثة - كيمياء وحيوان - فسيولوجيا (ج ١-٣)

Mansoura University
Faculty of Science
Zoology Department
Date: 17 / 1/ 2013
Time/ 2 hours

Program:Chemistry/Zoology
Subject : Physiology(1)
Academic year: 3rd level
Course: Z301

PART I [30 Mark]

[I-A]Choose the letter(s) correosponding to correct answer: **[10] Mark**

1-Diabetes insipidus occurs when ADH secretion is :
a-increased. b-decreased. c-activated. d-inactivated

2-Hormones which affect growth are:
a-anabolic hs. **b-stimulatory hs.** **c-insulin&growth hs.** **d-tropic hs.**

3-Glandular cells which secrete melanocyte stimulating hormone(MSH) are:
a- corticotropes. **b-corticotropic.** **c-adrenocorticotropic.** **d-nanotropic.**

4-Somatostatin inhibits secretion of :
a-Growth h.. **b-insulin.** **c-glucagon.** **d-all.**

5-Excessive secretion of prolactin inhibits:
a- ovulation. **b- FSH&LH.** **c-spermatogenesis.** **d- lactation.**

6-An example of catabolic hormone is :
a-glucagon **b-cortisol .** **c- throxin.** **d-all.**

7-Cretinism occurs due to decreased secretion of:
a-thyroxine. **b-growth h.** **c-TSH.** **d-TRH.**

8- Hormones produced by adrenal medulla are:
a-non- steroid hs. **b-steroid hs.** **c- protein hs.** **d-polypeptid hs.**

9-Oxytoxin is a polypeptide hormone consisting of:
a-29 amino acids. **b-one amino acid.** **c- 9 amino acids.** **d-non.**

10-At puperty ovaries secrete sex hormones under effect of :
a-estrogens. **b-GnRH & GTHs.** **c-estradiol.** **d-hypothalamic hs.**

[I-B]Shortly explain each of the following: **[10] Mark**

1-Glycoprotein hormones.
2-Calcitropic hormones.
3-Endocrine function of mature testis.
4-Negative feed back control mechanism.
5-Mineralocorticoids.

[II]Complete each of the following **[10] Mark**

1-Parathyroid hormone is responsible for....., while calcitonin is responsible for.....

2-Hormones which control secretion of other hormones are called..... and includes.....,.....,.....

3-Steroid hormones derived from ..... and exert their action inside.....

4-Increased secretion of thyroid hormones causes.....

5-Organs such as,..... ,.....,.....are not endocrine glands, however they can produce hormones because .....

PART (II) [30 Mark]

[I-A]- Complete: **[10] Mark**

1- Production of ATP associated with oxidation is called .....

2- The non nitrogenous residues of the amino acids can be used for:

a- .....

b- .....

c- .....

3- If not sufficient oxaloacetic acie is present, acetyl COA resulted from ..... of fatty acids will ..... To form ..... which is the parent ..... can be dissimilated by various tissues expect ..... and ..... and can be converted to ..... by ..... or to ..... By ..... Their accumulation in the blood is called .....

[I-B]- a- Give an account on the fate of pyruvic acid **[10] Mark**

b- By diagram only explain each of the following:

1- Glycolysis

2- Kreb's cycle for urea formation

[II]- Answer the following: **[10] Mark**

a- Demonstrate the importance of:

1- High liver glycogen

2- Hexose monophosphate shunt

b- Explain 2 only of the following expressions:

1- Glycogenolysis

2- Lipotropins

3- Glucogenic amino acids

Good luck

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