Mansoura University
Faculty of Science
Zoology Department
Subject: Toxicology Z310

First Term
January, 2011
Date:26-1-2011
Time: 2 Hours

Final examination in (January 2011) for 3rd-year Chem.&Zool. Students

Answer all questions

Answer the following quetions

Q1)a-What is the advantage of food processing at home? (20 mark)

b-Identify food additives, nominate two food color additive referring to their toxic effect on kidney

c-mention 2 types of plastics

d-Clinical toxicology concerned with……and……of poisoning (complete)

e-The dose (identify)

f-Show the sequence of intoxication progress?(demonstrate)

g-Acute and chronic toxicity (compare)

h-The most common site of renal damaged from heavy metal is…… and tubular damage is indicated by…….. (complete)

Q2) a-Classify food additives. (20 mark)

b-Illustrate 2 different types of solvent and show the precaution to be taken while using them.

c-Nominate the therapeutic use of mercury, lithium and bismuth

d-Is the metal or its carbonyl is more toxic? give example

e-Which of metals accumulate in lung after 40 years? Why?

f-Answer as shown between brockets:

- Ingestion of large quantities of vit. A leading to a distinct yellowish of skin called ----------(complete)
- When the organism itself cause the problem, the illness is classed as intoxication (correct the sentence)
- The word plastic desired from the Greek word meaning---------- (complete)
- Aluminium salts, are converted to phosphate salts in the gastrointestinal tract and excreted in the---------as such
- Plastics are called parkesine, later celluloid by (Dnaventura Orfila, Alexander Parkes, Gorge Adison) add time under the right name.
- The response dose relationship in estimating LD50 (Draw)
- Metal that accumulate in the body have ----------disease potential (complete)

Q3) Illustrate **(20 mark)**

- **Additive effect**
- **The gradations of acute oral toxicity**
- **The relation between body surface, body volume and toxicity**
- **The possible mechanism of renal toxicity by cadmium**

Q4)1- Mention the factors affecting the action of the toxic material (20 mark)

2- Compare between

- **acute and chronic toxicity**
- **LD_{50} and LC_{50}**
- **Caution and Warning**

3- What is the different change of toxic effects genetically?

4- You are given poisonous case, suggest the clinical steps that should be follow to measure the toxicity and write the report

5- From the application studies that you provided with it , summarize one of them referring to the role of dietary factors and its mode of action in attenuate the toxicity

Prof. Dr Gamal Fathy Edrees
Dr. Hanaa Ali Hassan
مع تمنياتنا لكم بالتوفيق

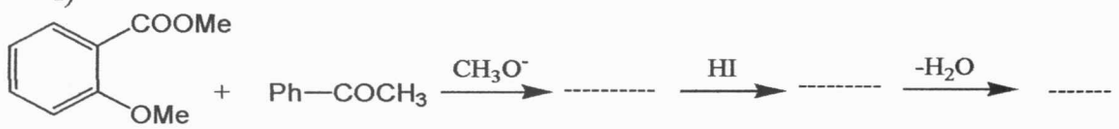
كيمياء امركبا – نرمتانة الفصل ٢٠١١
المستوى الثالث

Faculty of Science Mansoura University Chemistry Department *Subject*: Chemistry Course(s):Org. Chemistry 337		1st Term 3 rd LEVEL Students Date: Jan. 2011 Time Allowed:2 hours Full Mark: 80 Marks

Answer All Questions

1) Predict the heterocyclic product(s) of only eight of i-x: (26 Marks)

i)



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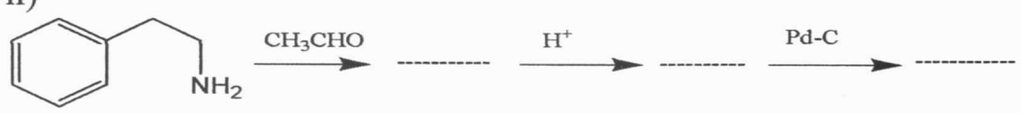

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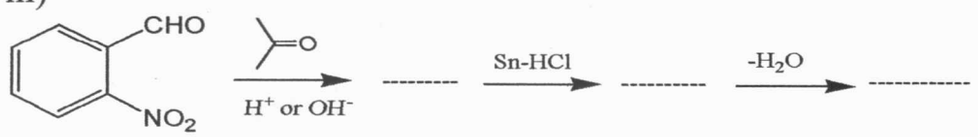

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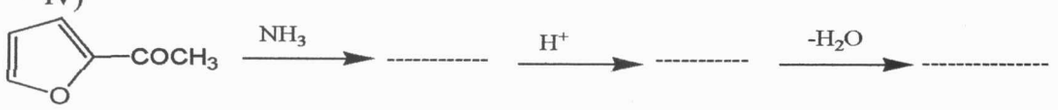
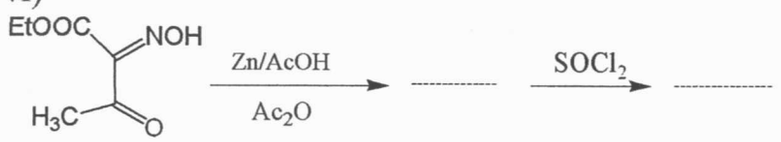


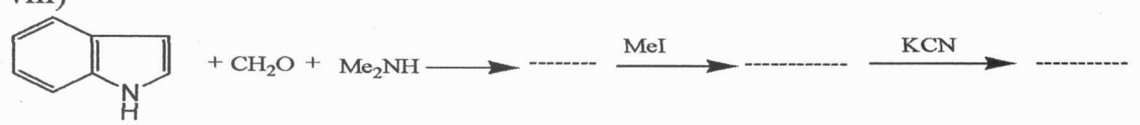
v)

vi)

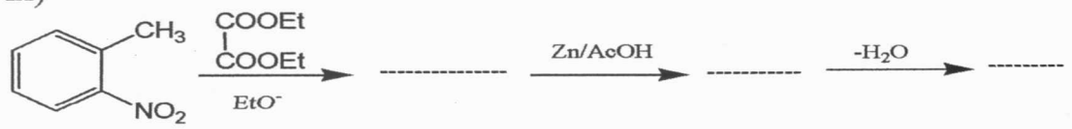


vii)

viii)

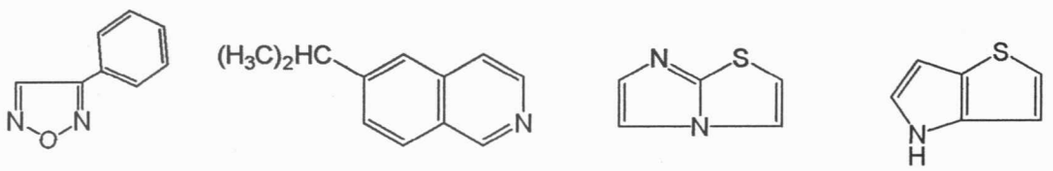


ix)



x)

2-A) Give acceptable name of each of these heterocycles : (8 Marks)



B) Diagram the following: (9 Marks)

i) Formation of penta-1,3-diene from pyridine

ii) Conversion of glycerol to quinoline

iii) Synthesis of furan-2,4-dicarboxylic acid from 2-pyrone-5-carboxylic acid

C)Show by equations these reactions: (10 Marks)

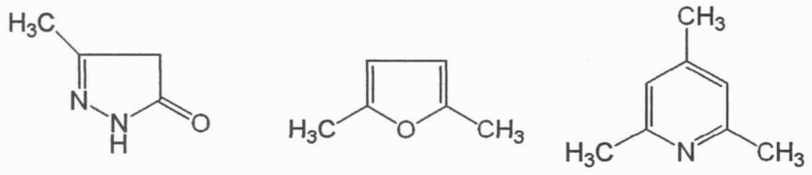
i) Pyrrole with $CHCl_3$/ NaOH

ii) Pyridine with perbenzoic acid

iii) Furfural with alc. KCN

iv) Quinoline with each of HNO_3 and $NaNH_2$

3-A) Design a synthesis of each of the molecules below starting with a β-ketoester e.g., ethyl acetoacetate: (15 Marks)



B) Write equations to show the reactions of : (12 Marks)

i) Furan with acetyl nitrate

ii) Thiophene with catalytic reduction using Raney nickel

iii) Pyridine with phenyl lithium

iv) Salicylaldehyde with acetic anhydride and sodium acetate

GOOD LUCK

Prof. Dr. Ez Kandil, Dr. E. Boshra and Dr. E. Keshk

Mansoura University **Faculty of Science** **Chemistry Department** **Subject: Chemistry** **Course(s):** Chemistry (314)		**First Term** **Third Zoology & Chem.** **Date : Jan. 2011** **Time Allowed: 2 hours** **Full Mark: 60 Marks**

Answer the Following Questions

Section (A) **(30 Marks)**

ANSWER THE FOLLOWING QUESTIONS :

a) Briefly discuss the theory of visual use of metal ion indicators
b) Drive the pH curve during the titration of strong acid and weak base.
c) Prove that pH=pKa+[salt]/[acid] for a buffer solution.
d) Compare between Mohr's ,Volhard's.
e) Analysis the simple mixtures by using EDTA
f) from the following weak acids ., which is the strongest ;
Propionic acid , Ka=1.34x10-4
Citric acid ,Ka=8.2x10-4
Acetic acid , Ka=1.78x10-5
g) Find the pH of acetic acid in solution, which made by mixing 25 ml of 0.2 M HCl with 25 ml of 0,2 m sod.Acetate,(Ka =1,78 x 10- 5)
h) The pH of a 0.025 M HI solution at 25 C is _____.
a) 1.06 b) 1.60 c) 3.69 d) 4.12

Section (B) **(30 Marks)**

1.a- 100 g sample of a pollutant was extracted into 100 ml cyclohexane. If its concn. = 10^{-8} M . What is the initial concentration in ppm or ppb units?

b- If a pollutant concentration = 10^{-7} M(100 ml) was extracted with 100 ml solvent. The remaining concentration =2.10^{-8} M . What are the No. of extractions performed to achieve 99.2 % from initial concentration.

c- Describe the main methods of preparation and application of ion exchangers. What is meant by separation factor and capacity?

d- What do you understand by:- (i) programm controlled gas chromatography. ;
(ii) Effect of pH. ; (iii) Gel Chromatography. ;
(iv) Affinity chromatography.

e. Discuss and compare between two of the most sophisticated techniques in chromatography.

المستوى الثالث - كيمياء وحيوان - الكيمياء الغير عضوية (ك ٣٢٣)

Mansoura University
Faculty of Science
Chemistry Department

Date: 12th January 2011
Time: 2 hours
Marks: 80

Final Exam in Inorganic Chemistry (Chem 323) for Third Year (Chemistry / Zoology) Students

Answer the following questions:-

1a) Draw all the possible isomers for the following complexes (15 marks)

i) $[Cr(en)_2Cl_2]$ iii) $[Pt(NH_3)_2Cl_2]$

ii) $[Cu(H_2O)_4][PtCl_4]$

1b) Write the coordination formulae of the following complexes: (15 marks)

i) Chloro bis-ethylene diamine nitrito cobalt(III)chloride

ii) μ-dihydroxo bis-chloro triamine chromium(III) ion

iii) Hexamine chromium(III) hexacyano cobaltate(III)

………………………………………………………………………………

2a) Complete the following equations & sentences:- (12 marks)

i) ……………, ……… and …………... are ambidentate ligands while …….., ……….. and ………………. are bidentate ligands. Please show their modes of chelations.

ii) $MnO_2 + HCl \rightarrow$ ……………………..

iii) $TiO_2 + NaOH \rightarrow$ …………………

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

2b) Explain TWO methods for the detection of complexes' formation. (10 marks)

2c) Arrange the following according to the listed property (8 marks)

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

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

iii) **Basic character: MnO, Mn_2O_7, MnO_2**

iv) **Magnetic properties: Ti^{3+} , Cr^{3+} , Sc^{3+}**

.....

3a) Comment on the following:- (10 marks)

i) **Some transition metal ions and their complexes are used as catalysts**

ii) **FeO_4^{2-} is strong oxidizing agent than MnO_4^{2-}**

3b) True and false (circulate the correct response and correct the wrong one):- (10 marks)

1) T - F **$[Co(NH_3)_6]^{2+}$ is more stable than $[Co(NH_3)_6]^{3+}$**

2) T - F **Ni metal is not passive towards diluted acids.**

3) T - F **V_2O_5 is amphoteric.**

4) T - F **Fe is rusty slow in water to form $Fe(OH)_3$.**

5) T - F ***trans*-$[Pt(NH_3)_2Cl_2]$ is optically inactive**

All the best wishes
Prof. Magdy Bekheit
Prof. Gaber Abou Elreash
Prof. Nagwa Nawar
Prof. Sahar Mostafa

أصول كيمياء - علم الأجنة

Mansoura University
Faculty of Science
Zoology Department

First Term Exam, Jan. 2011

Education year: Third level
Time: 2 hours
Date: 10/ 1/ 2011

Program: Chemistry / Zoology
Subject: Zoology
Course: Embryology
Full Mark: 60

Answer all the following questions:

Q1) a- Answer using ONLY labeled diagram. (16) Marks

1- Developmental stages of neurula of tadpole. (3) marks
2- The development of inner ear of tadpole. (4) marks
3- Formation of the tubal heart of chick embryo 25-29 hours. (5) marks
b- Discus the role of hypoblast formation of the avian embryo. (4) marks

Q2) Choose the correct answer of the following: (24) Marks

1- The kidney of vertebrates is derived from ..... mesoderm.
a- intermediate b- chorda c- paraxial
2- The second sign of gastrulation of toad is ..... at the blastopore.
a- invagination b- involution c- involution & epiboly
3- Mammalian embryos do not increase exponentially from 2- to 4- to 8- cells stages, but frequently contain.....
a- double number b- odd number c- not a or b
4- In non-amniotic vertebrates, the number of cranial nerves is .....
a- 14 pairs b- 12 pairs c- 10 pairs
5- During the formation of the eye of vertebrates, the lens arises from.....
a- epidermal ectoderm b- neural ectoderm c- mesoderm
6- The parts of brain vertebrates are divided twice except ..... does not divide.
a- Prosencephalon b- Mesencephalon c- Rhombencephalon
7- The mammalian embryo proper comes entirely from .....
a- epiblast b- hypoblast c- both of them
8- In birds, ... forms portion of stalk linking the yolk mass to the endodermal digestive tube.
a- embryonic endoderm b- primary endoderm c- mesoderm
9- The major structural characteristic of ..... gastrulation is the primitive streak.
a- avian b- avian & reptiles c- avian, reptiles & mammalians
10- Formation of trophectoderm is the first differentiation event in ..... development.
a- avian b- reptiles c- mammalians
11- The first cells migrate deeply through Hensen's node are destined to become the .....
a- endoderm b- endoderm of the fore gut c- mesoderm
12- The uterine cells that form the embryonic portion of the placenta is .....
a- chorion b- deciduas c- epiblast

باقي الأسئلة بالخلف

13- Each cell of the inner cell mass of human embryo able to be.....
a- totipotent b- pluripotent c- multipotent

14-The epiblst cell layer is split by small clefts to separate .....
a- embryonic epiblast & amniotic ectoderm b- embryonic epiblast & yolk sac c- embryonic epiblast & primitive streak

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

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

Q3) a- Give the reason for each of the following: (8) marks

1- Closure of the foregut of chick embryo 20 hours.
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.
4- During Toad gastrulation, the pharyngeal endoderm is pushed to the side of the blastopore.

b- Write short note by the aid of labeled diagram if possible: (12) marks, (4) for each

1- Mammalian modification for development within another organisms.
2- General characters of chick embryo 24 hours incubation.
3- Role of trophoblast in mammalian development.

With My Best Wishes ..... Dr. Manal M. Ramadan

مستوى ثالث حيوان/كيمياء - فسيولوجي (١)

Mansoura University
Faculty of Science
Zoology Department
Mansoura, Egypt
Subject: Zoology
Course (s): Physiology

January, 2011
3rd level: **Chemistry/ Zoology**
Date: 28/1/2011
Time: 2hrs
Full Mark: 60

Answer All the following Questions

I- Answer the following: (21 marks)

a) Discuss 3 only of the following expressions: (9 marks)

1- Oxidative phosphorylation.
2- Transamination.
3- Glycogenolysis.
4- Glycolysis.

b)Give account on the physiological importance of 4 only: (12 marks)

1- Juxta glomerular apparatus.
2- Factors affecting filteration in glomerulus.
3- High levels of liver glycogen.
4- Proximal convulated tubule.
5- Hexose monophosphate shunt.

II- Explain in diagrams only: (9 marks)

1- The B-oxidation of fatty acids.
2- The fate of active acetate.
3- The blood supply of the kidney.

III-Choose the correct answer : (20 marks)

1- Specific receptors of steroid hs. are:
a-inside target cells **b- inside the nucleus** **c- outside target cells**

2- Factors controlling aldosteron secretion are:
a- Na^+ & K^+ levels **b- Ca^{2+} level** **c- ACTH**

3- Two hs. consisting of (191 AAs & 84 AAs) are called:
a- protein hs. **b- peptide hs.** **c- amin acids-derived hs**

4- The endocrine system is important for maintaining homeostasis through releasing:
a- electrical signals **b- chemical signals** **c- long signals**

5- Addison's disease occurs when adrenal cortex is:
a- over active **b- less active** **c- active**

6- Angiotensinogen stimulates secretion of:
a- Aldosterone **b- angiotensin** **c- renin**

7- The inactive form of h. called:
a- pro-hormone **b- pre-hormone** **c- anti-hormone**

8- An example of the hs. stimulated by another hs. are:
a- TSH **b- ACTC** **c- STH**

9- Exophthalmos means:
a- eye ball protrusion **b- toxic goiter** **c- thyroid hyperfunction**

10- Thyroxine increases:
a- metabolic rate **b- glucose absorption** **c- glucose ingestion.**
11- Parathyroid h. secretion is cantrolled by:
a- nervous system **b- anterior-pituitary** **c- hypothalamus**
12- Glucagen secretion is increased due to:
a- decrease in fatty acids **b- increase in insulin**
c- decrease in glucose
13- Somatostatin increases secretion of:
a- growth h. **b- growth h. releasing h.** **c- growth h. inhibiting h.**
14- Tropic hs. control secretion of:
a- other hs. **b- steroid hs.** **c- hypothalamic hs.**
15- Excess production of calcitonine causes:
a- decreased parathyroid h. **b- Ca^{2+} increase** **c- Ca^{2+} decrease**
16- Anterior pituitary hs. are all peptide hs. except:
a- FSH **b- TSH** **c- GH**
17- Testosterone is responsible for:
a- bone growth **b- testes development** **c- protein anabolism**
18- The most potent female h. is:
a- estradiol **b- estrone** **c- estriol**
19- Type 2 diabetes occurs due to:
a- decreased insulin level **b- decreased insulin action**
c- insulin resistance
20- Pharmacological action of cortisol occurs when the h. produced by:
a- Large quantities **b- les quantities** **c- normal quantities**

IV- Complete (Five only) of the following: (10 marks)

1- Thyroglobulin is a substance that combine with ..... to form .....

2- Bone cells include ..... , ... which are responsible for .....

3- Insulin secretion is high at period ....., ... and low at periods .....

4- Corticotropes secrete a large protein that is hydrolyzed to form ..... , ... , ...

5- Diabetes insipidus is similar to diabetes mellitus in .....

6- Secretion of ..... , ... , ... in large quantities decreases tissues sensitivity to insulin , which can lead to .....

Best Wishes

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

المستوى الثالث - مجموعة البيولوجي - فيزياء حيوية

الإحصاء الحيوي (٢٠١)

جامعة المنصورة كلية العلوم -- قسم الرياضيات المـــادة:إحـــصاء حـــيـــوي كود المادة : ر ٣٠١ الدرجة الكلية : ٨٠ درجة		إمتحان دور يناير ٢٠١١ المستوى : الثـــالـــث شعب: برامج * التاريخ: ١٧ / ١ /٢٠١١ الزمن: ســـاعتان

Answer the following questions

Q1: (25 marks)

A random sample of size 36 is taken from a population with mean μ and variance σ^2 and tabled as :

Classes	2 — 4	4 — 6	6 — 8	8 — 10	10— 12
frequency	6	7	10	7	6

(a) Find the median (M) , the mode (D) and standard deviation (S) **(15 marks)**

(b) Compute a 95 % confidence interval for the mean μ . **(10 marks)**

Q2: (25 marks)

(a) Let X be a random variable has density function $f(x)=\begin{cases} a e^{-3x} & : x \geq 0 \ \ and \ \ a > o \\ 0 & otherwise \end{cases}$

Find (i) The value of a (ii) p (X = 3) and p (X < 3) (iii) E (X) and V(X) .

(b) A fair coin is tossed 10 times. Let X be the number of heads which appear .

Find p(X = 4) and p(X < 4). **(10 marks)**

Q3: (30 marks)

(a) Let X be a random variable having values 1 , 3 , 5 , 7 , 9 , 11 and Y another random variable having values 2 , 4 , 6 , 8 , 10 , 12 . Compare between the dispersion of the values X and the dispersion of the values Y. **(10 marks)**

(b) A random sample of size 49 is taken from a normal population with mean 12 and variance 36 . Find $p(\overline{X} \geq 14)$. **(10 marks)**

(c) A random sample has elements 8.5 , 11.5 , 9.5 , 10.5 , 8 , 9 , 11 , 10 , 12 is taken from a normal population $N(\mu,\sigma^2)$ with unknown mean and unknown variance. Find 95% confidence interval for μ. **(10 marks)**

Note that : p (Z < 2.34) = 0.99 p (Z > 2.34) = 0.01 p (Z < 1.5) = 0.93

$Z_{0.025}=1.96$, $Z_{0.05}=2{,}58$ $t_{(0.025,8)}=2.3$, $t_{(0.05,8)}=3.35$ $t_{(0.025,9)}=2.26$

برامج * (برنامج فيزياء حيوي ، علوم بيئة ، كيمياء ونبات . كيمياء وحيوان ، ميكروبيولوجى)

مع تمنيات اسرة التدريس (أ. د. محمود ياسين ، د. بية الدسوقي ، د. عديلة عثمان & د. محمد جاد)

أسئلة الفرقة الثالثة - شعبة الكيمياء - بيئة صحراوية وفونا مصرية

٢٠٩ ح

Mansoura University
Faculty of Science
Department of Zoology

Date: 24-Jan-2010
Time: 2 hours
Full mark: (100)

2010/2011 First Semester Exam **of (Ecology & Egyptian fauna)**

Level 3- Chemistry/Zoology program

Answer (All) the following Questions.

1- Write short notes on two only:

a. Factors affecting flora & fauna decomposition.
b. Behavioral adaptation characteristics of the Egyptian animals that live in desert (with examples).
c. Allen and Bergmann roles for animal environmental adaptation

(25 marks).

2- Give the appropriate terminology of the following statements:

a. The web or network of relations among organisms at different scales of organization
b. Is the scientific study of the distributions, abundance and relations of organisms and their interactions with the environment.
c. The ability of a plant or animal species to live and reproduce in its surroundings.
d. The explanation of size change based on theoretical considerations of surface to volume ratio.
e. Group of animals that gain their body heat from outside (various body temperature)
f. The ability of organism to compensate for external change in the laboratory.
g. Physical+ Chemical+ Biotic factors
h. The specific interrelation of the intermediate organism responses (tightly) to the physical factors.
i. It was related to the richness of a community or geographical area in species and corresponded to the number of species present in a definite area.
j. The only sound currency in the economics of ecosystem function biomass & numbers.

b. In most ecosystems nitrogen is primarily stored in living and dead organic matter. This organic nitrogen is converted into inorganic forms when it re-enters the biogeochemical cycle via decomposition. In the light of this statement diagram the processes of N cycling from inorganic form to organic form through the ecosystem?

(25 marks).

3- a. By drawing only illustrate:

1- the partitioning of energy in a link of the food chain & the energetic efficiencies associated with each metabolic step through the organism.
2- Detritus food chain and its importance in the biosphere.

b. Compare with examples between *Megafauna* and *Microfauna*.

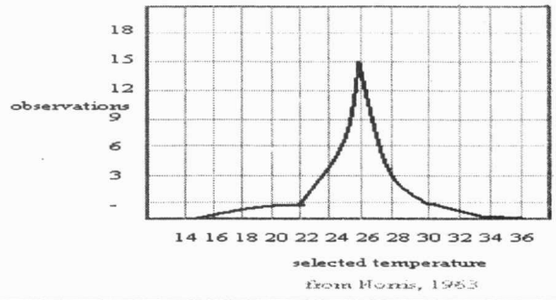
(25 marks).

follow up the rest of questions... !!

أكمل باقى الأسئلة بالخلف

4- a. in an experimental approach discuss the ecological differentiation in subspecies of the savannah sparrow that are restricted to salt marshes and the migratory races, that not ordinary frequent areas of salt water.

b. . **Ecology – interpreting data**

Adaptation to temperature Identify the: final preferendum:..... the behavior for feeding.....	 from Morris, 1983

(25 marks).

Good luck

Dr. Zeinab Abou-Elnaga

Mansoura University
Faculty of Science
Botany Department
El-Mansoura, Egypt

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
First Term: Jan. 2011

Educational Year: Third Year **Program (Branch): Botany/Chemistry**
Subject: N 313 **Course(s): Molecular Biology-Microbial Gentics**
Time: 2 hrs **Date: 08 /01 /2010** **Full mark: 60.0** **Question mark: 20.0**

Answer the following questions:

1 **Q-1- A- Assume that have the following coding sequence:**

5- ….ATG GCC TGG ACT TCA GTT….-3 Sense strand
3-…..TAC CGG ACC TGA AGT CAA….-5 Antisense strand

With the help of the provided genetic codon table, summarize the steps that lead to the synthesis of the polypeptide chain which encoded by that sequence. **(10marks)**

b- Compare between DNA polymerase I and III. (10 marks).

2 **Q-2-A- Complete the following (10 marks):**

1- A single tRNA can recognize two or more of ------- codons and this phenomenon is known as ---------.
2- The conditions favoring DNA denaturation include-------, ------- and -------.
3- Replication bubble has two -------, moving in opposite direction. Helicase with the help of ------- keeps the parental DNA molecule unwinded.
4- The genetic codon runs in a -------- direction on mRNA and the anticodon runs in a --------- direction.
5- The modification of mRNA in case of -------- include the addition of ------- to 5' end and to ------- to 3' end. Also include splicing the ---------- by--- --
6- The different forms of RNA are mRNA, tRNA, ---------, and ---------.
7- In the double helix molecule, the --------- are stacked on the inside and the --------is on the outside.
8- The lagging strand replicates in several small -------- called ----------.

Q-2-B- Plasmids vary in ------, --------- and replicate -----from the genomic chromosome. Often there are --------- copies present in one cell. Plasmids generally carry genes that are --------- for a cell's survival except under ----------. For example, many plasmids carry genes for antibioties, these plasmid enable the host cell becomes --------- to a given ----------. Some plasmids carry resistance genes to several antibiotics, making them very dangerous pathogens. In other cases virulence-plasmids do exist in some bacteria, the bacterium carrying such a plasmid is able to cause a -------, but when the plasmid is -------- that same bacterium became avirulent. A plasmid name consisted of --------, --------, and ---------- or ----------.

3 **Q-3- Answer the following questions as indicated in the heading of each one.**

1. Which of the following is mismatched? (2 mark)

A. Pilus --- bacterial conjugation B. Flagellum --- bacterial conjugation
C. Plasmid --- bacterial Transformation D. Transduction --- temperate phage

2. Making new copies of DNA from old copies of DNA is known as (2 mark):

A. Transcription B. Transformation C. Replication
D. Translation E. Transduction

3. Genetic variation results from (2 marks):

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a- Transduction b- mutation c-conjugation d- transformation e- none of them

4. In the Griffith experiment, the substance present in the suspension of heat-killed virulent cells of *Streptococcus pneumoniae* that, when mixed with living non virulent cells, transformed them into living virulent cells was **(2 marks)**

A. DNA B. capsular material from the virulent cells
C. mouse phagocytes D. RNA E. Spn toxin

5. Two strains of *Salmonella* are mixed, one which is arg-, his -, cob- and CMr, and the other which is cob-, thi-, and CMs. In order to determine if genetic recombination takes place between these organisms which medium would you plate the mixture of cells on in order to detect the recombinants? arg = arginine, cob = cobalamin (vit B12) his = histidine, thi = thiamin (vit B1) and CM = chloramphenicol (r = resistant; s = sensitive) **(2 marks)**

A. Glucose minimal medium plus cob, arg **B.** glucose minimal medium plus cob, thi
C. glucose minimal medium plus cob, his **D.**glucose minimal medium plus cob, CM
E. glucose minimal medium plus his, thi, CM

6. During the process of generalized transduction (2 marks)

A. a bacteriophage capsid can enclose and transfer any part (gene) of the bacterial chromosome.
B. the recipient must be susceptible to infection by the same bacteriophage as the donor.
C. the transfer of DNA is inhibited in the presence of DNAase
D. cell to cell contact is required E. two of the above

7. In bacterial genetics the term competence refers to a bacterium with (2 marks) A. ability to be transformed
B. the F factor integrated into its chromosomal DNA
C. susceptibility to lytic infection by bacteriophage
D. susceptibility to lysogenic infection by bacteriophage
E. ability to act as a DNA donor during transformation

8- The most common form of conjugation involves the transfer of plasmids from one cell to another, which statement(s) is true (2 marks).

a- This process is very efficient, as the recipient cells literally change SEX and quickly begin to mate with F^- cells.
b- Certain F^+ plasmids are able to fuse with the genomic DNA of the host and upon mating the entire donor's genome can be transferred into a recipient cell.
c- The sex plasmid genes are responsible for the synthesis of sex pili that have "sticky" ends that bind firmly to molecules on recipient cell walls.

9- Silent mutation resulted from (2 marks):

a- base change leading to no change of the amino acid sequence of the translated protein
b- One or more base pairs are inserted or deleted in the DNA
c- a single base pair is replaced by another and have no effect on phenotype.
d- a change in the reading of codons.

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10- Sickle cell disease in humans is due to (2 marks):

a- a missense mutation in the gene for globin.
b- alteration in the shape of red blood cells which affect their movement through blood capillaries.
c- Frameshift mutation
d- nondense mutation

First letter	Second letter: U		Second letter: C		Second letter: A		Second letter: G		Third letter
U	UUU	Phenyl-alanine (Phe)	UCU	Serine (Ser)	UAU	Tyrosine (Tyr)	UGU	Cysteine (Cys)	U
	UUC		UCC		UAC		UGC		C
	UUA	Leucine (Leu)	UCA		UAA	Stop	UGA	Stop	A
	UUG		UCG		UAG	Stop	UGG	Tryptophane (Tryp)	G
C	CUU	Leucine (Leu)	CCU	Proline (Pro)	CAU	Histidine (His)	CGU	Arginine (Arg)	U
	CUC		CCC		CAC		CGC		C
	CUA		CCA		CAA	Glutamine (GluN)	CGA		A
	CUG		CCG		CAG		CGG		G
A	AUU	Isoleucine (Ileu)	ACU	Threonine (Thr)	AAU	Asparagine (AspN)	AGU	Serine (Ser)	U
	AUC		ACC		AAC		AGC		C
	AUA		ACA		AAA	Lysine (Lys)	AGA	Arginine (Arg)	A
	AUG	Methionine (Met)	ACG		AAG		AGG		G
G	GUU	Valine (Val)	GCU	Alanine (Ala)	GAU	Aspartic acid (Asp)	GGU	Glycine (Gly)	U
	GUC		GCC		GAC		GGC		C
	GUA		GCA		GAA	Glutamic acid (Glu)	GGA		A
	GUG		GCG		GAG		GGG		G

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