احصاء حيوى (ر ٣٠١) - كيمياء ونبات - احصاء

Mansoura University
Faculty of Science
Math. Dept.
BIOSTATISTICS (ر ٢٠١)

Exam : Jan. 2012
Time : 2 hours
3th-year *
Date: 27 / 12 / 2012

Answer the following questions: (Total: 80 Marks)

[1] a-The following table is a random sample of weights of 80 students in kg

Weights	20-	30-	40-	50-	60-	70-
No. of Students	**20**	**15**	**20**	**12**	**8**	**5**

Find: i) median. ii) mode. iii) standard deviation. (21 Marks)

b- Find the coefficient of variation (C. V.) for the following data:
-2, -8, -6, 0, 4, 6, 10, 14, 12, 20. (9 Marks)

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[2] a- A random sample of 100 students shows that 20 of them are smoking regularly. Find 99% confidence interval for the proportion of the smoker students. (10 Marks)

b- Suppose that 4% of the glasses made by a certain machine will be defective in some way. If 10 glasses made by this machine are selected randomly, find

i) The probability that none of them is defective, and how many would we expect to be defective?

ii) The probability that at least 2 will be defective. (10 Marks)

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[3] a- A sample of size 16 is drawn from a normal population with mean $\mu = 200$ and variance 36. Find the probability that the sample mean will be less than 199. (10 Marks)

b- The contents of 10 similar containers of sulfuric acid are 6, 8, 9, 10.2, 10.4, 9.5, 10, 10.5, 5 and 9.2 liters. Find 95% confidence interval for the mean of all such containers, assuming an approximate normal distribution. (10 Marks)

c- If X is a random variable which has the probability distribution

x	1	2	3	4
P(x)	a	0.2	0.3	0.1

Find i) the constant a. ii) E(3X+1). iii) Var (X). (10 Marks)

$(z_{0.005} = 2.58, z_{0.01} = 3.32, t_{9,0.025} = 2.262, t_{10,0.025} = 2.228, \phi(0.67) = 0.75, \phi(1.67) = 0.98,$
$P(0 \le z \le 0.67) = 0.32, P(0 \le z \le 0.89) = 0.45).$

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

تمنياتنا بالتوفيق.

د. بيه الدسوقى- د. عديلة عثمان - د. محمد جاد- د. فاتن شيحة

المستوى الثالث - علوم الحيوان - فونا مصرية ٢٠١٢

Mansoura University
Faculty of Science
Department of Zoology

Date: 2-Jan-2012
Time: 2 hours
Full mark: (60)

2011/2012 First Semester Exam of (Egyptian fauna)
Level 3- Ecology program (ع ب ٣٠١)

Answer All the following Questions:

Q1: write short notes on the following: **(20 Marks)**

1. Sahara Birds
2. Adaptation of Amphibians and reptiles to hot desert.
3. Population density parameters
4. Biosphere

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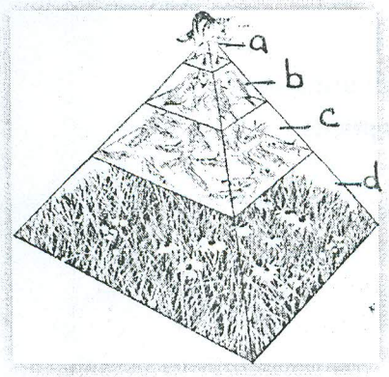
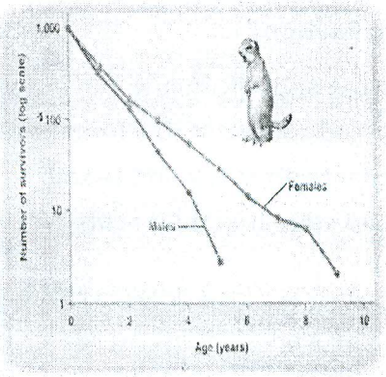
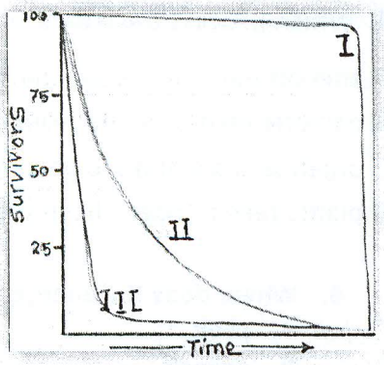
Q2: a. Explain the data for two only of the following diagrams: **(20 Marks)**







b. What kind of adaptations Scorpion have to survive?

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Q3: a. Compare: **(20 Marks)**

1. Food chain & food web 2. Ecosystem & Community 3. Acclimation & Acclimatization

b. ***If a species of bacteria doubles every five minutes, starting out with only one bacterium, how many bacteria would be present after one hour?***

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 Nutrient cycle which are related to the mentioned processes.**

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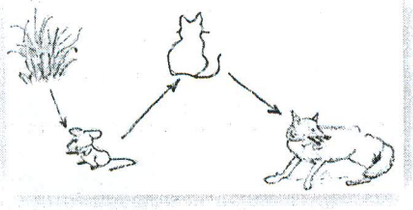
Q4: MCQ : **(20 Marks)**

1. Referring to the image, the coyotes would be considered .....

A. herbivores
B. third-level consumers
C. second-level consumers
D. decomposers



باقي الاسئلة في الخلف

2. What is "soil type" to an earthworm?

A. abiotic factor
B. biome
C. biotic factor
D. carbon source

3. How long are food chains?

A. 4 steps long
B. 3 steps long
C. it varies with day length
D. it varies with ecosystem

4. Which process describes nitrogen fixation?

A. animals eat plants containing nitrogen and return it to the soil through urination
B. bacteria take nitrogen from the air and convert it to a form usable by plants
C. organisms die and are decomposed into ammonia in the soil
D. plants take nitrogen from the air and store it in their roots

5. Where does the energy that powers the water cycle come from?
   A. plant
   B. animals
   C. the sun
   D. electric outlet

B. Answer only one of the following questions

1. Why the energy pyramid always shows a decrease moving up trophic levels?
2. Diagram of the partitioning of energy in a link of the food chain.

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Good Luck

Dr. Zeinab AbouElnaga

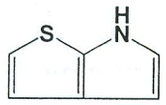
(٣٣٧ ك) كيمياء عضوية - كيمياء اكلات

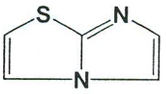
لـ بنات
لـ صيدلة

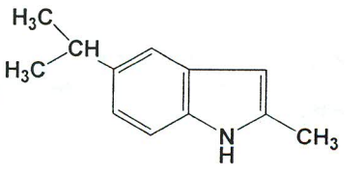
Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Org.Chem.337		1st Term 3rd Level Students Date: 23 / 1 / 2012 Time Allowed: **2** Hours Full Mark: **80** Marks

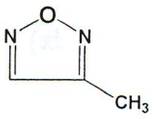
Answer All Questions

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

i) 

ii) 

iii) 

iv) 

b) Diagram the following: **[18 Marks]**

i) Conversion of pyridine to 4-nitropyridine

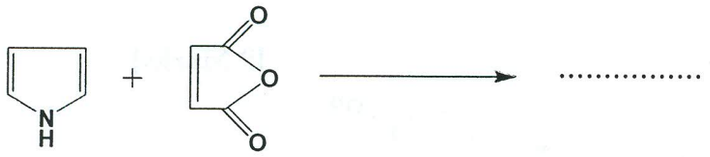
ii) Synthesis of quinoline

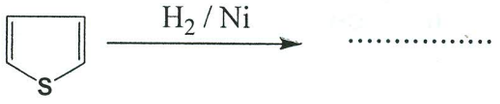
iii) Formation of 3-cyanomethylindole

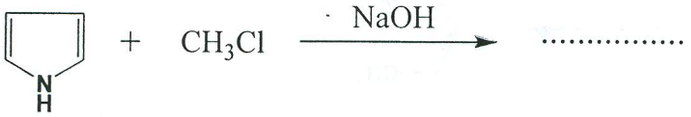
iv) Preparation of 2- chlorothiophene

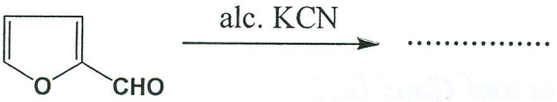
2- Complete these reactions: **[27 Marks]**

i) 

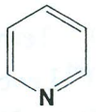
ii) 

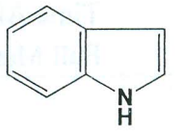
iii) 

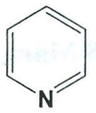
iv) 

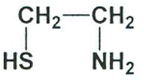
v) 

P. T. O.

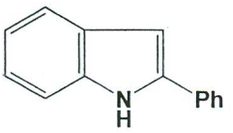
vi)  KOH / heat ⟶ .....

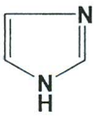
vii)  CH_3CHO / HCl ⟶ .....

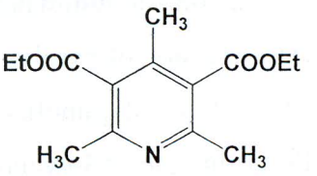
viii)  $PhCO_3H$ ⟶ .....

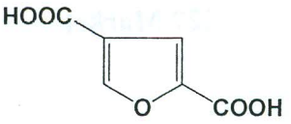
ix)  HCOOEt ⟶ ..... P_2O_5 ⟶ .....

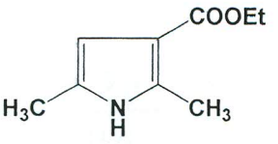
3- a) Design one synthesis of each of the molecules below: **[18 Marks]**

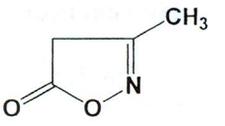
i) 

ii) 

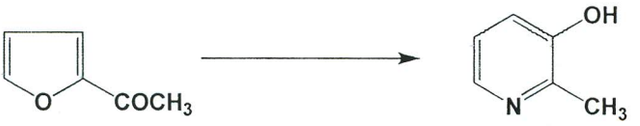
iii) 

iv) 

v) 

vi) 

b) Diagram these conversions: **[9 Marks]**

i) 

ii) 

Best Wishes and Good luck

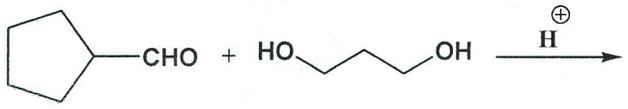
Examiners: Prof. Dr. Ez Kandil, Prof. Dr. Evelin Boshra, A.Prof. Dr. Eman Keshk

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

Answer All Questions

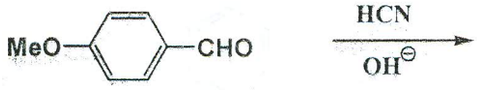
Question 1 (30 marks)

1- **Write the major product(s) of Five only from the following reactions. Explain the suitable mechanism for each one.** **(20 marks)**

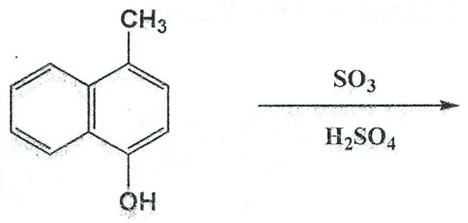
a) 

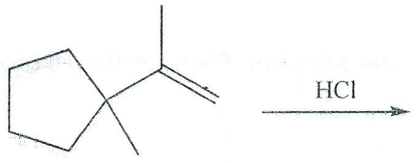
b) 

c) 

d) 

e) 

f) 

g) 

2- **Write shortly what you know about two only of the following :** **[10 marks]**

a; Generation and stability of carbocations.

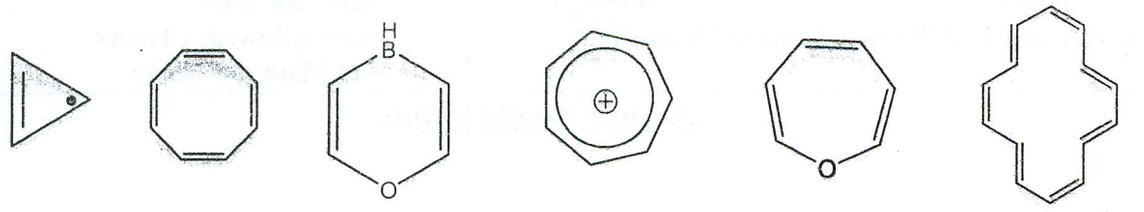
b; Stereochemical mechanism of SN^1 and SN^2 reactions.

c; Orientation of monosubstitued benzene.

Please turn the paper

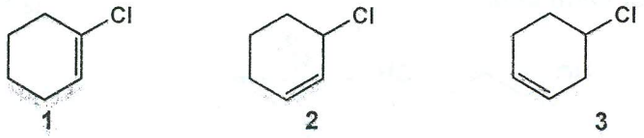
Question 2 [25 marks]

a) Predict with discussion five only of the following structures is aromatic , antiaromatic or nonaromatic. [10 marks]



1 2 3 4 5 6

b) Which of the following isomeric chlorides will undergo SN^1 more readily? Give reasons. [5 marks]



1 2 3

c) Propose with discussion a synthesis of 2-chloro-4-nitro benzoic acid from benzene. [10 marks]

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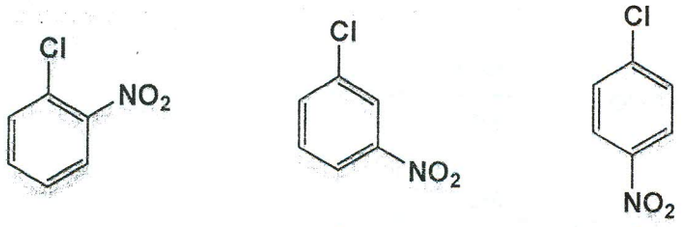
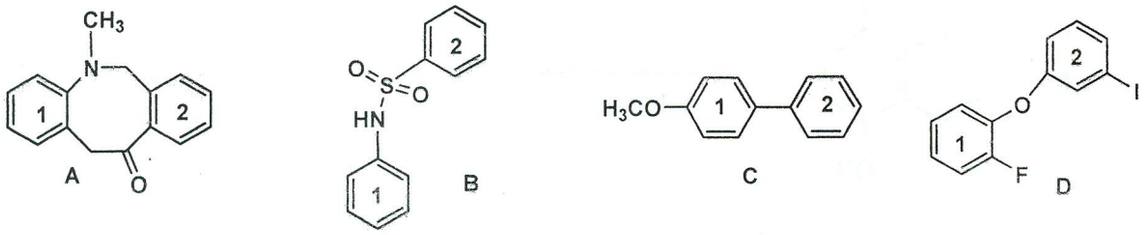
Question 3 [25 marks]

a) Show by mechanism which of the following compounds gives a mixture of three products when treated with NaOH under high temperature and pressure. [10 marks]



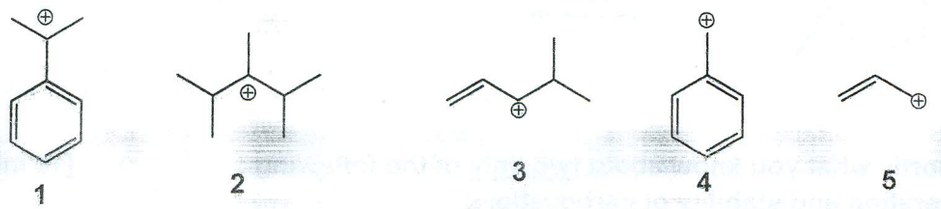
1 2 3

b) Which ring (1) or (2) in the following compounds undergo electrophilic nitration more readily than the other. Indicate with discussion the position of the reactin. [10 marks]



A B C D

c) Arrange the following carbocations according the stability. Explain the reasons. [5marks]



1 2 3 4 5

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With Our Best Wishes *Prof. Dr. M. Barghot; Dr. S. El-Desoky ; Dr. A. El-Mekabaty*

كيمياء - كيمياء بالفاكهة والنباتية (٣٢٣)

Mansoura University
Faculty of Science
Chemistry Department
Course(s):. (323) Chemistry/Botany

First Term, Level Three.
Date : 5 January 2012
Time Allowed : 2 hours
Full Mark : 80 Marks

ANSWER THE FOLLOWING QUESTIONS

1) A- Name the following complexes and indicate the possible isomers: *(15 Marks)*

xi) $[Cl_3(NH_3)Fe\text{-}(OH)_2\text{-}Fe(NH_3)(en)Cl]$
xii) $[Pt(NH_3)_4][PtCl_6]$
xiii) $[Mn(CN)_6]^{4-}$
xiv) $[Zn(pyridine)_2Cl_2]$
xv) $[PtCl_2(NH_3)_4]Br_2$

B- Write the structural formula for each of the following compounds: *(5 Marks)*

i- Potassium hexacyanomanganate(III).
ii- Tri μ-carbonylbis(tricarbonyliron(0)).
iii- Pentaminenitritocobalt(III) ion.
iv- Sodium tetraoxochromate(VI).
v- Tetramineplatinium(II) tetrachloroplatenate(II).

2) A- Chose the correct answer: *(10 Marks)*

i- Trans $[PtCl_2(NH_3)_2]$ has dipole moment equal ..... **(1, 2, Zero)**
ii- The molar conductivity of $[CoCl(NH_3)_5]Cl_2$ is ..... **(Zero, 100, 250)**
iii- Square planar $[Cu(CN)_4]^{3-}$ complex ion has ..... magnetic moment **(Zero, normal, subnormal)**
vi- The linear **$[Cl\text{-}Ag\text{-}SCN]^-$** complex ion has ..... isomerism **(geometric, linkage, coordination)**
v- The $[Cu(NH_3)_4(H_2O)_2]^{2+}$ complex ion has ..... has geometrical shape **(octahedral, tetrahedral, square planar)**

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.

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

i- $3Co_3O_4 + 8Al \rightarrow$ ..... + ...

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

iii- $VCl_4 \xrightarrow{H_2O}$ - - - - - - -

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

v- $Sc_2O_3 + C \xrightarrow{1000^\circ C}$ ---- $\xrightarrow{H_2O}$ ----- + -----

B- Which of the following compounds would be paramagnetic? *(10 Marks)*

i- $[Sc(NH_3)_6]^{3+}$ **ii-** $[Ni(NH_3)_6]^{2+}$
iii- $[Co(NH_3)_6]^{3+}$ **iv-** $[Fe(CN)_6]^{4-}$

Please turn over

4) A- Write briefly on the extraction of **Titanium** metal from its ores. *(10 Marks)*

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

i- T - F Vitamin B12 is a Co^{2+} complex and is used for anemia patients.

ii- T - F Ni metal is passive towards aqua regia.

iii- T - F Fehling test is used for detection of sugar in urine by reduction of Cu^{2+} to CuO.

v- T - F TiO_2 is amphoteric.

vi- T - F Fe rusts slowly in air in presence of humidity to Fe_2O_3.

Best Wishes

Prof. Magdy Bekheit
Prof. Nagwa Nawar
Prof. Sahar Mostafa

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

المستوى الثالث - كيمياء ونبات - (ك ٣١٤) - التحليل الحجمي والوزني - طرق الفصل الكروماتوجرافي

Mansoura University **Faculty of Science** **Chemistry Department** **Subject : Inorganic Chemistry** **Course(s):** Chem. (314) Chromatography- volumetric and gravimetric analysis	كلية العلوم جامعة المنصورة	**First Term** **Third level Botany & Chem. Students.** **Date : 12,1. 2012** **Time Allowed: 2 hours** **Full Mark: 60 Marks**

Answer The Following Questions

Sec. (A) (30 Marks)

i) A 100g sample of a pollutant (1 PPM) with M.W =100, was extracted with 100 ml solvent . The remaining is $1x10^{-6}$ M . Calculate D and the total amount extracted after 4 times.

ii) State five distinct solid stationary phases with their chemical constitution.

iii) Frove that R should be ≥ 1 for good separation .

iv) Tr or Vr is a constant value as long as …….. and used for……. Identificatita of analytes.

v) separation and elution of analytes on gel chrom.

vi) Separation factor (……) = …….. , and its value = ……., indicates good separation.

vii) Coss linking agents and its benefits.

viii) Compare between paper and TLC and between planar and column chromatography

ix) Soxhlet apparatus as multi - extractor.

x) How we avoid disadvantages in gel chrom.

xi) Give illustrative figures for GC & HPLC and compare between them

Section (B) [30 Marks]

1. Derive a curve for the titration of 50.0 ml of 0.1 M NaCl with 0.1M AgNO3, calculate PCl of the solution after the addition of 0.0,10.0,49.0,50.0 and 60.0 ml of 0.1M $AgNO_3$, prepare a titration curve from the data (kspAgCl = 10^{-10}) **[12 Marks]**

2. a) Explain and draw calomel electrode. **[6 Marks]**

b) Mention Mohr method for precipitation titrations **[6 Marks]**

c) Define the following (mention the law and example if present.

1- Acid – base indicator **2-** Accuracy **3-** Molarity

4- Complexmetric titration. **[6 Marks]**

With Best Wishes

Prof. Dr. A.M. El-Wakil **Dr. W. Abo El- Maty**

الفرقة الثالثة - كيمياء نبات (م ٢١٥) مسئول المادة الأستاذ

Mansoura University
Faculty of Science
Botany Department
Mansoura - Egypt

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة – مصر

Final Examination in Botany (Jan. 2012)

Educational Year: 3rd level
Course(s): Physiology Stress
Time: 2 hrs
Full mark: 60

Subject: Botany (B. 315)
Program: Chemistry /Botany
Date: 9 / 1 / 2012
Question mark: 20

Answer the following questions:

Q1: Discuss the effect of stress physiology that induced by water deficiency on stomatal movement. (20)

Q2: Briefly write on **two** of the following: (10 for each)

1- The response of photosynthesis and respiration to water stress.

2- Significance and nature of transpiration.

3- Effect of temperature as abiotic stress factor on transpiration and water absorption.

Q3: Discuss the active and passive absorption of water and the relative importance of them in plant. (20)

Examiners:

Prof. Dr. Omar A. El Shahaby **Prof. Dr. Afaf Gaber**

المستوى الثالث كيمياء نبات (ب ٣١٤) سوليوجيا هرمونية

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. 2012

Educational Year: Third Level **Program (Branch): Chemistry-Botany**
Subject: B(314) **Courses: Photobiology and plant hormones**
Time: 2 hrs **Date: 16 /1 /2012** **Full mark:** 60 **Question mark: 20**

Answer the following questions:

Q1 "The term photobiology refers to the study of the reactions as affected by the light in living organisms. Light affects directly and indirectly several physiological processes particularly the process of photomorphogenesis". From your studying the course " photobiology" discuss these statements. (20 marks)

Q2 **a-** Phytochrome is now well known to mediate several vital processes in plant life. Enumerate seven processes? (10 marks)

b- Explain the triple response with special reference to the biosynthesis and mechanism of action of the responsible hormone.(10 marks)

Q3 Briefly account on:

a- ABA biosynthesis. (5 marks)

b- Induction of seed germination by GA_3.(5 marks)

c- Mechanism of phototropism. (5 marks)

d- Delay of senescence by cytokinins. (5 marks)

Examiners: Prof. Mohamed Nageeb Prof. Samia Haroun

المستوى الثالث - نبات وكيمياء بيولوجيا جزيئية (م ٢١٧)

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

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
Second Term: Jun. 2010

Educational Year: Third Year **Program (Branch): Botany-Chemistry**
Subject: Microbial Genetics and Molecular Biology **Course(s): N313**
Time: 2 hrs **Date: 2 /11 /2012** **Full mark: 60** **Question mark: 20 points**

Answer the following questions:

1 Repot on the following:

a. Different strategies for viral reproduction. **(7marks)**
b. Gene mapping in viral chromosome by mutations. **(7marks)**
c. Genetic recombination as a result of conjugation. **(6marks)**

2 A- Answer each of the following either true or false and correct the false ones: (10 marks)

1. Replicase enzyme can synthesize RNA from DNA.
2. Integration and excision of fertility factor occur via a site specific recombination.
3. The binding of tail fibers to the cell wall is the first step of conjugation.
4. M13 infects E. coli but neither kills nor lyses its host cell.
5. The leading strand is synthesized from $5^{\backslash}$ to $3^{\backslash}$ whereas the lagging one is synthesized from $3^{\backslash}$ to $5^{\backslash}$.
6. An F^- cell usually remains F^- after the conjugation with an Hfr cell.
7. Generalize transduction occurs when a transducing phage fails to integrate into the bacterial chromosome .
8. Primer is a short stretch of RNA that synthesizes by the replicase .
9. The auxotrophic strains cannot grow on minimal medium .
10. When a temperate phage is integrated into bacterial chromosome , it is called a prophage .

B- Place T for true or F for false and correct the false statement (10 points).

1- Bacterial conjugation is the process in which DNA is transferred from a bacterial donor cell to another bacterial cell; through sex pili.
2- Competency is a process by which cell-free DNA enters all types microbial cells such as bacteria, fungi, algae and protozoa.
3- DNA and mRNA are the starting materials for cloning eukaryotic genes.
4- Reverse transcription is necessary for cloning insulin gene.
5- All restriction enzyme is a bacterial enzyme that cuts single-stranded DNA at specific recognition nucleotide sequences known as restriction sites.
6- Inside a bacterial host, host DNA is protected from its own restriction enzymes due to modification process called methylation.
7- Episomes and transposons are plasmids that can integrate themselves into the chromosomal DNA of the host organism.
8- Plasmid conformations are studied by DNA electrophoresis which may

appear as supercoiled, supercoiled denatured, relaxed circular, linear and the slowest mobile form is nicked open circular.

9- All DNA polymerases share two general characteristics: 5'->3' polymerase activity and exonuclease activity 3'->5' direction.

10- Gene gun (or biolistic transformation) is a device used to bombard plant cells with gold particles coated with foreign genes to accomplish genetic engineering.

3 Draw a map for a general plasmid to be used in cloning, sequencing and expression of foreign gene(s) showing all necessary sites and mention their functions. **(20 points)**