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: Second Level **Program (Branch): Biology**
Subject: Bot (203) **Course(s): Cytogenitics & Physiology of growth & development**
Time: 2 hrs **Date: 13/6 /2010** **Full mark:** 60 **Question mark: 20**

Answer the following questions:

Q1 Discuss **Fife only** of the following(20 marks)

A- The role of plant chemical defense against biotic stress.
B- The requirements for seed germination.
C- Fruit ripening as a phase of fruit development.
D- Cold as a type of abiotic stress on plants.
E- Physiological dormancy of seeds.
F- Herbicides manufacture.

Q2 A- Design a simple model to explain the developmental identities of the organ premordia within the floral meristem.(5 marks)
B- Sketch a labeled diagram showing the main parts of a mature flower.(5 marks)
C- Give an account on the following: (10 marks)
1- Cell cycle.
2- Pseudo- Dominance.
3-Types of duplication and give an example.

Q3 A- Draw a diagram showing the arrangement of genes in paracentric inversion.(10 marks)
B- Fill in the spaces using suitable words or phrases:(5 marks)
1- Chromosomes line up along the equatorial plate during the.....stage of mitosis.
2- Salivary gland chromosomes attain its huge diameter through the process of.....
3- The.....represents specific proteins that bind to centromeric DNA and is the site of spindle fiber attachment.
4- Gri-du Chat syndrome is caused by a.....in the short arm of chromosome 5, whereas Down's syndrome is caused by.....
C- Describe the Watson and Crick model of DNA and explain the stability of DNA. (5 marks)

Examiners: Prof. Mohamed Abbas, Prof. Samia Haroun, Prof. Magda Soliman, Prof. Afaf Gaber

المستوى الثاني - مجموعة البيولوجي - ميكروبيولوجي عامة (ب ٢٠٤)

Mansoura University
Faculty of Science
Botany Department
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جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
Second Term: Jun. 2010

Educational Year: Second Level **Program (Branch): Biology**

Subject: Bot (204) **Course(s): General Microbiology**

Time: 2 hrs **Date: 27 / 6 /2010** **Full mark: 60** **Question mark: 20**

Answer the following questions:

Q1 Fill in blanks with the suitable answer:

a- Sterilization is defined as ……………… ,however, disinfection is defined as………….. but sanitization is defined as………………

b- Membrane filters are used in case of …………………..

c- Bacteria able to thrive in high salinity are called ………………

d- Chlorine and its derivatives are most widely used as disinfectants of …………..

Q2 Answer the following:

a- Macronutrients are often listed as CHONPS . What does each of these letters indicates and why they are needed by the cell?

b- Differentiate between complex and chemically defined media.

c- Compare between Prokaryotic and Eukaryotic cell.

d- Write on:

1-Factors influencing effectiveness of antimicrobial agent.

2- role of Ecto- and endomycorrhizae and Rhizobia in Plant life.

3- Mode of action of phenols on micoorganisms.

e- Construct carbon and nitrogen cycles and role of Microorganisms.

Q3 *Choose the correct answer :

a- Which of the following does not kill endospore:

1- Autoclaving 2-Inciniration 3- Pasteurization 4- All of these kill endospore.

b- Which of the following is used to control microbial growth in food?

1-Organic acids 2-Alcohols 3- Heavy metals 4-Enzymes 5-All above.

Examiners: Prof. Samy Shaaban, Prof. Mervat Hosney, Prof. Abd-Eldayem Sherif, Dr. Doaa Darwish

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Final Examination in Botany
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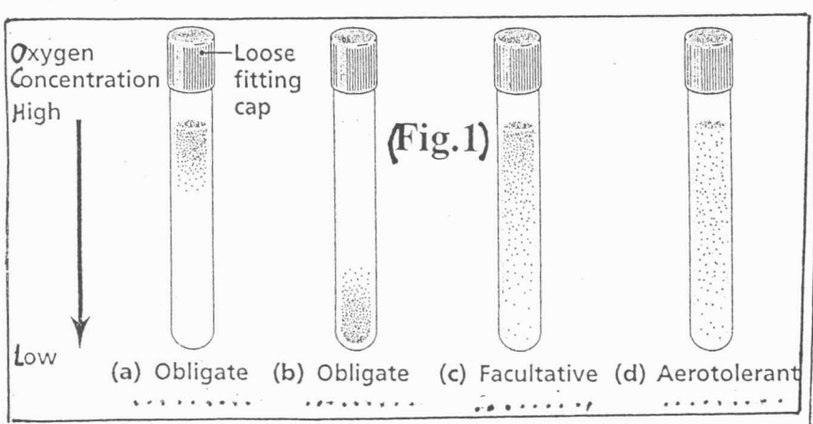
c- Psychrophilic microorganisms would be expected to grow:

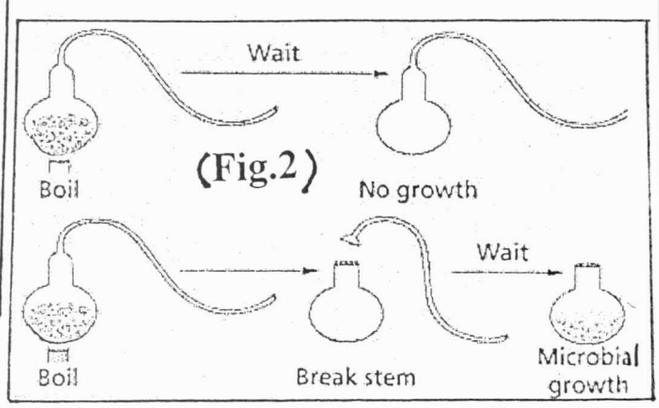
1-In hot springs 2-At refrigerator 3-On human body
4- At low pH .

d-In viable count technique each..... represent a ..... from the sample population : 1- Cell, colony 2-Colony,cell
3- Hour, generation 4-Cell, generation.

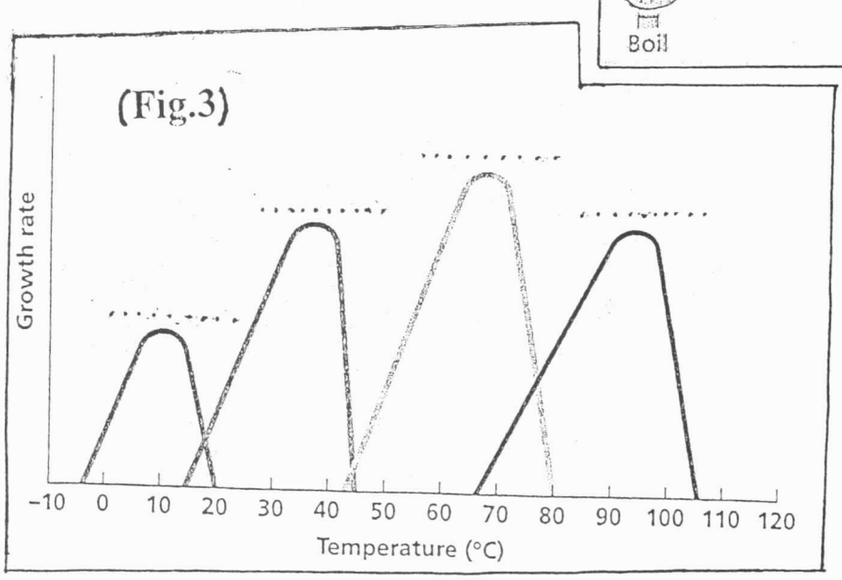
** Comment on results in Figures (1),(2),(3).



(Fig.1)

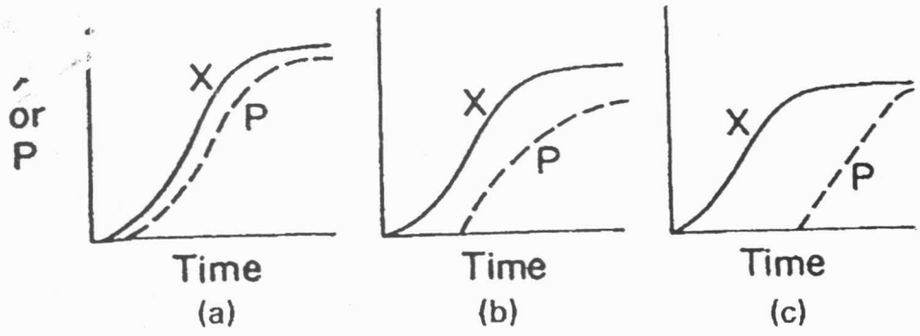


(Fig.2)



(Fig.3)

Examiners: Prof. Samy Shaaban, Prof. Abd-Eldayem Sherif, Prof. Mervat Hosney, Dr. Doaa Darwish



4-a- Recognize the kinetic pattern of microbial growth and product formation in each case and briefly discuss. (3 ½)

a- .....
.....
.....

b- .....
.....
.....

c- .....
.....
.....

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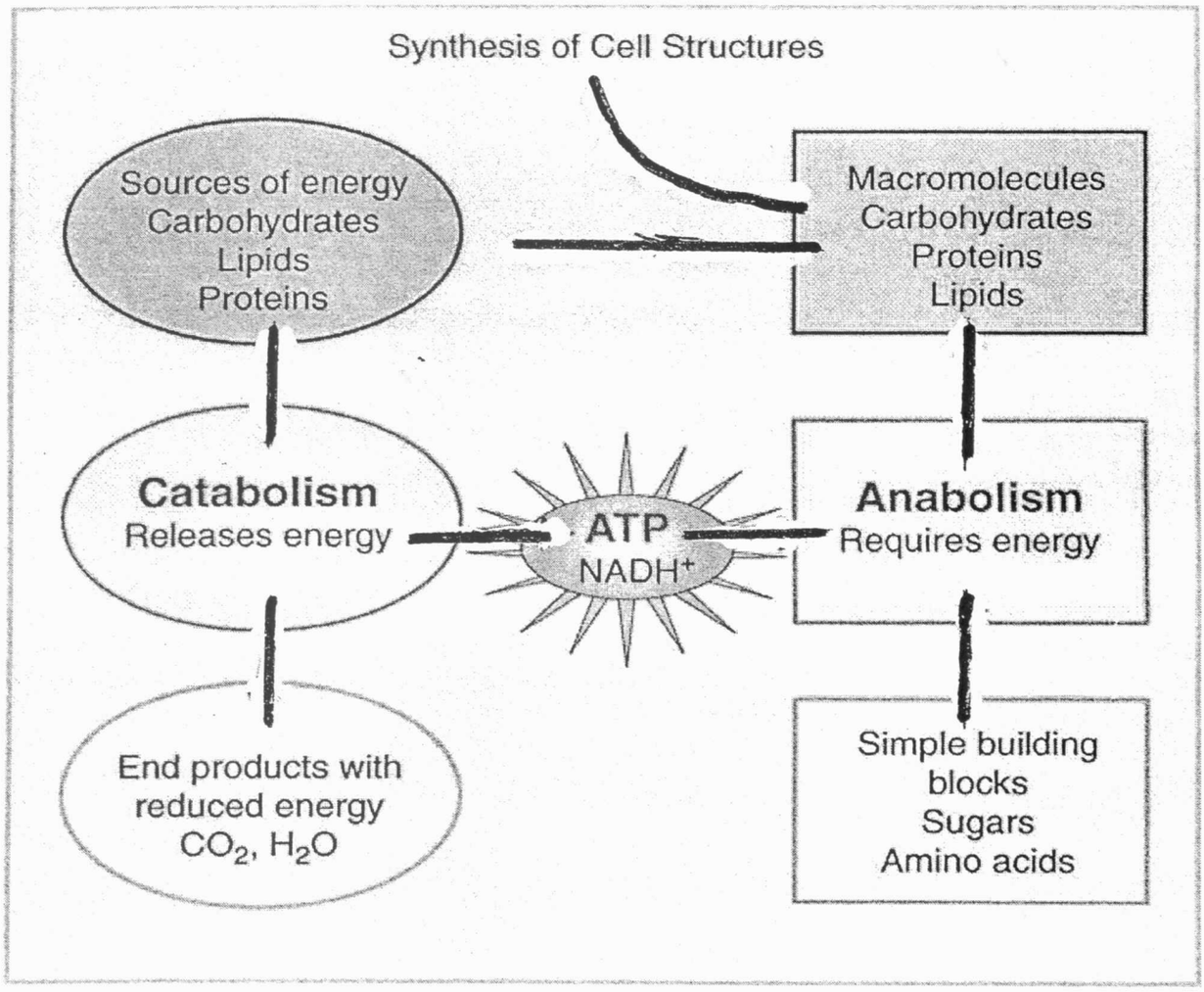
b- Fill in the table below with the carbon & energy source of each type of organisms. (3 ½).

Organism	Carbon Source	Energy Source	Examples
Chemoautotroph			
Photoheterotroph			
Photoautotroph			
Chemoheterotroph			

There are three mechanisms for the phosphorylation of ADP to produce ATP. Write the name of the mechanism that describes each of the reactions in the following table. **(3 ½).**

ATP Generated by	Reaction
a-	Utilizing radiant energy from sun to convert phosphorylate ADP to ATP
b-	Using energy from proton motive force to add phosphate ion to ADP
c-	Phosphoenolpyruvic acid → Pyruvic acid

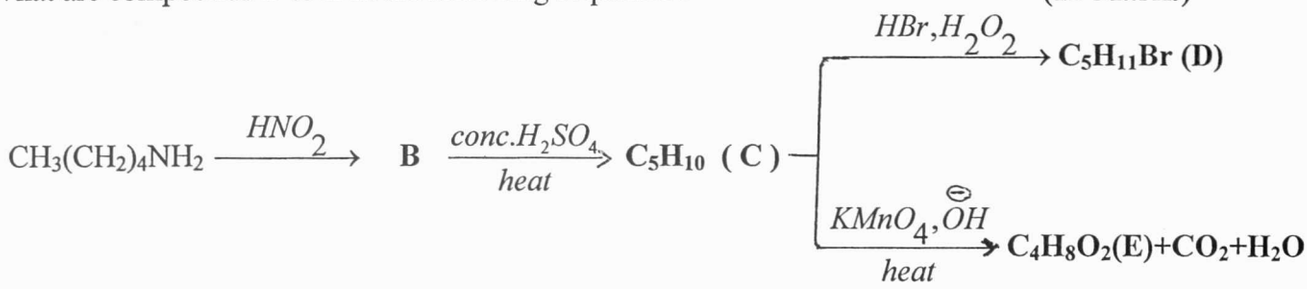
5-a-Put the heads of the arrows in the following figure. (2 ½)



Mansoura University **Faculty of Science** **Chemistry Department** **Subject: Chemistry** **Course(s):** Org. Chemistry 236	كلية العلوم جامعة المنصورة	**Second Term** **2nd LEVEL Students.** **Date : May 2010** **Time Allowed: 2 hours** **Full Mark: 80 Marks**

ANSWER ALL QUESTIONS

1. A) What are compounds **B** to **E** in the following sequence : **(12 Marks)**

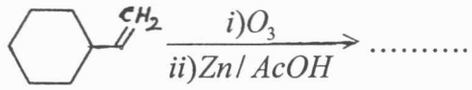


B) Compare between the following pairs of compounds as the case specified (give reason): **(15 Marks)**

i) Acetic acid and chloroacetic acid (acidity)
ii) 2-Chlorobutane and isobutene (optical activity)
iii) Benzylamine and N-methylbenzylamine (Hinsberg test)
iv) Benzoyl chloride and acetamide (reactivity towards water)

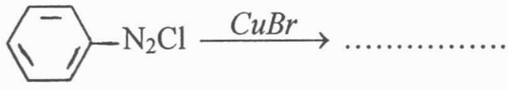
2. A) On chlorination of propane it was found that the reactivity ratio between 1°:2° H-atoms is 1:3.25
Calculate the percentage of each isomer **(7 Marks)**

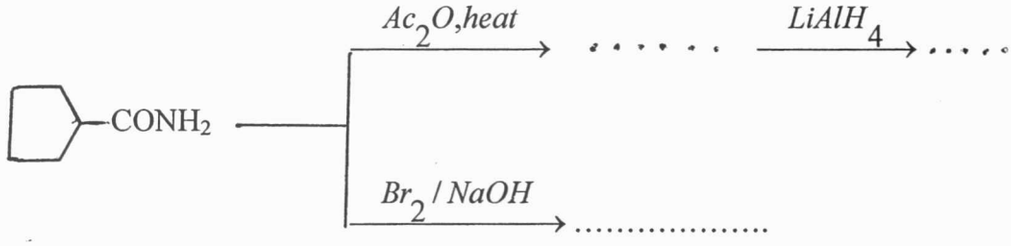
B) Predict the product(s) : **(14 Marks)**

i) 

ii) 2-butene $\xrightarrow[CCl_4]{Br_2}$ .....

iii) EtOOC—≡—COOEt $\xrightarrow{H_2/Pt}$ .....

iv) 

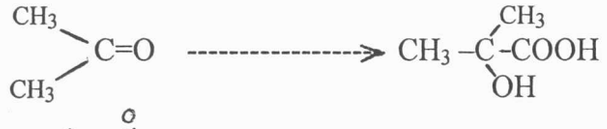
v) 

C) Deduce the structures of the following compounds that give only monochorination product :
C_6H_{12}, C_5H_{12}, C_8H_{18} **(6 Marks)**

3. A) **(12 Marks)**

i) Draw the cyclic structure of glucose
ii) What is ment by mutarotation ?
iii) Why glucose and fructose give the same osazone ?
iii) Give the products of both mild and strong oxidation of glucose

B) Show how the following conversions could be affected : **(14 Marks)**

i) 

ii) 

iii) Fructose ----------> glucose

iv) glucose ----------> n-hexane

v) 

vi) 

vii) 

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Mansoura University
Faculty of Science
Chemistry Department
Course: Physical Chemistry
Date : 15/ 06/ 2010

Second term Examination
Subject: Chemistry (241)
Second level
Full Mark : 60 Marks
Time Allowed : 2hours

Answer the Following Questions:

I)-Choose the response that best complete each statement giving reason: (2.5 marks for each one)

You must explain your reasoning to get credit for your answer

1- In which process is the system entropy increasing?

I. Expansion of a gas into a vacuum. II. Vaporization of a liquid.
III. Precipitation of a solid from solution

a) all of them b) only II and III c) only I and III d) only I and II e) only III

2- Which of the following statements regarding the third law of thermodynamics is **INCORRECT**?

a) Pure substances have positive absolute S at $T > 0$ Kelvin.
b) The absolute S is greater at 300 K than 100 K for a given substance.
c) The absolute S is zero at 0 Kelvin.
d) The absolute S at 298 K can be positive or negative.

3- The equilibrium constant for a chemical reaction will be equal to one (1) under which one of the following conditions? a) $\Delta H^o < 0$ and $\Delta S^o = 0$ b) $\Delta H^o = 0$ and $\Delta S^o = 0$
c) $\Delta H^o < 0$ and $\Delta S^o > 0$ d) $\Delta H^o > 0$ and $\Delta S^o < 0$

4- Identify the INCORRECT statement below:

a) In spontaneous changes the universe tends toward a state of greater disorder.
b) The Gibbs free energy of a system is increasing in any spontaneous process at constant T and P.
c) The entropy of a pure, perfect crystal at $T = 0$ K is zero.
d) The entropy of a system can decrease in a spontaneous process, if the surrounding entropy is increasing even more.

5- Which of the following quantities can be determined directly from the slope of a ln P versus 1/T representation?

a) Equilibrium constant. b) Molar volume in gas phase.
c) Temperature of boiling d) Enthalpy of vaporization

6- Which of the following liquids is likely to have the highest value for S°?

a) N_2H_4 b) H_2O c) C_2H_5OH d) CH_3OH

7- The total entropy change for the reversible expansion of an ideal gas is:

a) Positive b) negative c) zero d) impossible to tell

8- Under what circumstances will ΔG for a chemical reaction always be positive?

a) An endothermic reaction that generates fewer moles of gaseous products than gaseous reactants.
b) An exothermic that generates solids from liquid reactants.
c) An exothermic reaction that generates fewer moles of gaseous products than gaseous reactants.
d) An endothermic reaction that generates more moles of gaseous products than gaseous reactant.

9- $\Delta H^\circ = -92.5$ kJ for the following reaction: $PCl_3(g) + Cl_2(g) \rightarrow PCl_5(g)$ This reaction is most likely to be

a) spontaneous at all temperatures
b) spontaneous at high temperatures but nonspontaneous at low temperatures
c) spontaneous at low temperatures but nonspontaneous at high temperatures
d) nonspontaneous at all temperatures

10- For the adiabatic compression of a gas, which is true?

a) $q = 0$ and $\Delta U > 0$ b) $q > 0$ and $\Delta U = 0$
c) $q = 0$ and $\Delta U < 0$ d) $q < 0$ and $\Delta U = 0$

11- . The value of q for an isothermal ideal gas system when work is being done on that system is: ----------

a) positive b) negative c) zero d) impossible to tell

12- For isothermal irreversible expansion of an ideal gas the work done is given by .

a) $W = nRT \ln P1/P_2$ b) $W = -\Delta U$
c) $W = nRT (1-P_2/P_1)$ d) none of these answers

13- The heat capacity at constant volume is _____ the heat capacity at constant pressure for an ideal gas:

a) greater than b) less than c) the same as d) cannot determine

Answer the following Questions: (6 marks for each one)

II) 1) One mole of ideal gas at 27 °C and 100 bar is allowed to expand reversibly and isothermally to 5 bar. Calculate the amount of heat adsorbed.

2) Calculate the equilibrium constant for the reaction

$$\tfrac{1}{2}\, N2\,(g) + 3/2\, N2\,(g) \rightarrow NH3\,(g)$$

given that the enthalpy and entropy changes at 298 K are –46.2 kJ and –99.2 J/K, respectively.

3) An ideal heat engine is run between two temperatures of 550 K and 275 K. Calculate the Carnot efficiency for this heat engine.

4) Calculate the change in entropy of the system, ΔS, and the change in entropy of the surroundings, ΔS_{surr}, when one mole of an ideal gas is expanded isothermally and reversibly from a pressure of 5.0 bar to 1.0 bar at 300 K. What is the entropy of the universe?

5) Prove the relationship of Free Energy and Equilibrium constant

GOOD LUCK,

Examiners: Prof. Dr. Awad I. Ahmed, Dr. A.S. Khder and Dr. A.M. Ouf

المستوى الثاني - برامج (ك - ك ح - ك ن - ك ح ع - ميكرو - ك ح ع - علوم بيئة - ج)
رياضيات بحتة (ر ٢٠١)

الفرقة: الثانية المادة: ر ٢٠١ – رياضيـــات بحتة (تفاضل عالي ومعادلات تفاضلية)	كلية العلوم – قسم الرياضيات	دور مايو ٢٠١٠ الزمن: ســـــــاعتان التاريخ: ٢٠١٠/٦/١٧

الشُعب : كيمياء-كيمياء حيوية-كيمياء ونبات-ميكروبيولوجيا-كيمياء وحيوان-علوم البيئة -جيولوجيا

أجب على الأسئلة الآتية: (٢٠ درجة لكل سؤال)

[1]أ اختبر وجود النهايات المتكررة و النهاية العامة للدالة $f(x,y)=\dfrac{x^2-y^2}{x^2+y^2}$ ، وذلك عندما $(x,y)\to(0,0)$

ب. باستخدام نظرية أويلر للدوال المتجانسة اثبت أنه إذا كانت $u(x,y)=\tan^{-1}\left(\dfrac{x^3+y^3}{x-y}\right)$

، فإن : $x\,u_x+y\,u_y=\sin 2u$.

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[2] حقق نظريـــــة "جرين" للتكامل : $\oint_c (x^2-y)\,dx+(x-y^2)\,dy$ حيث c هو المنحنى المحصور

بين المستقيم $y=x$ و القطع المكافئ $y^2=x$ مأخوذاً في الاتجاه ضد عقارب الساعة .

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[3]أ. إذا كان $I_n=\int_0^{\pi/2}\sin^n x\,dx$ ، فاثبت أن: $I_n=\dfrac{n-1}{n}I_{n-2}$, $(n=2,3,4,\ldots)$ ،

ومن ثم استنتج قيمة التكامل: $\int_0^{\pi/2}\sin^6 x\,dx$.

ب. حل مسألة الشروط الابتدائية: $xy'-y^2=1$, $y(1)=1$.

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[4] حل المعادلات التفاضلية الأتية :

(i) $\ln(y^2+1)\,dx+\dfrac{2y(x-1)}{y^2+1}\,dy=0$

(ii) $4xy'-y=4xy^5\ln x$

مع التمنيات بالتوفيق ع

المستوى الثاني برامج (ك - ع ك - ك ح - ك ع ن - ميكرو - ك ع ح - علوم بيئة - ج)
رياضيات بحتة (ر ٢٠١)

الفرقة: الثانية		دور مايو ٢٠١٠
المادة: ر ٢٠١ – رياضيـــات بحتة		الزمن: ســــــاعتان
(تفاضل عالي ومعادلات تفاضلية)		التاريخ: ٢٠١٠/٦/١٧
	كلية العلوم – قسم الرياضيات	

الشُعب : كيمياء-كيمياء حيوية-كيمياء ونبات-ميكروبيولوجيا-كيمياء وحيوان-علوم البيئة -جيولوجيا

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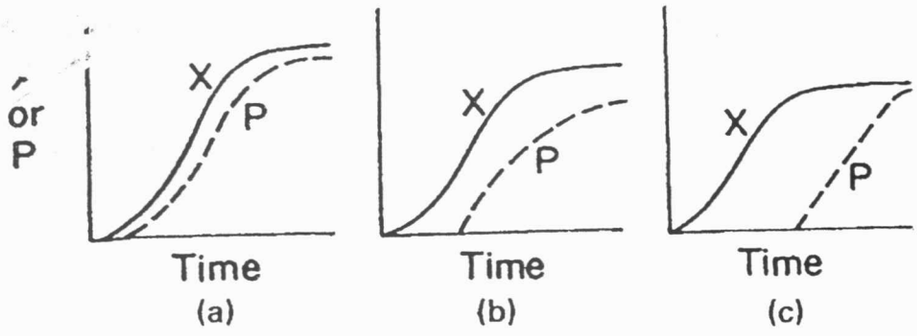
ب. حل مسألة الشروط الابتدائية: $xy'-y^2=1 \quad ,y(1)=1$.

[4] حل المعادلات التفاضلية الأتية :

(i) $\ln(y^2+1)\,dx+\dfrac{2y(x-1)}{y^2+1}\,dy=0$

(ii) $4xy'-y=4xy^5\ln x$

مع التمنيات بالتوفيق



4-a- Recognize the kinetic pattern of microbial growth and product formation in each case and briefly discuss. (3 ½)

a- .....
.....
.....

b- .....
.....
.....

c- .....
.....
.....

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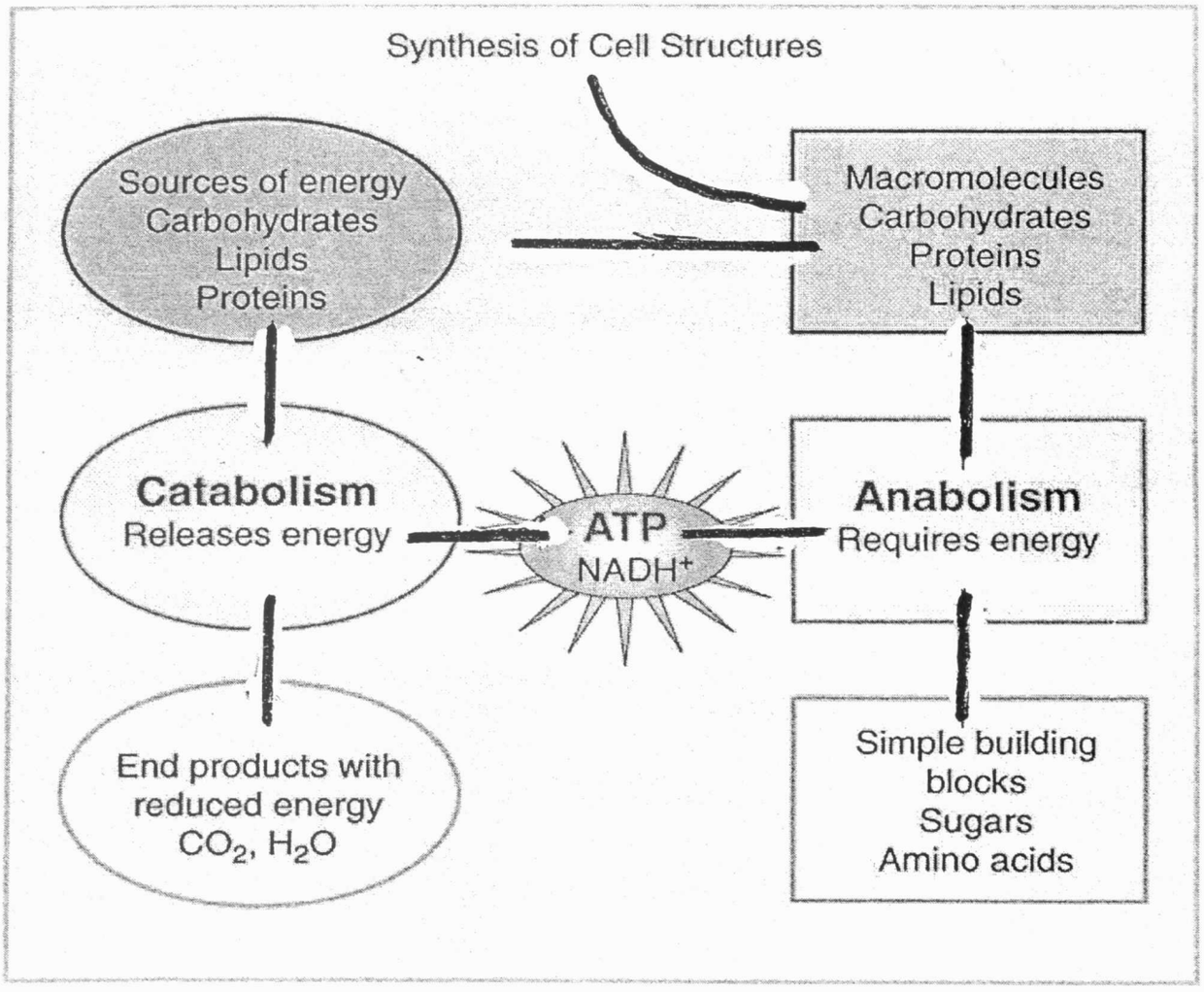
b- Fill in the table below with the carbon & energy source of each type of organisms. (3 ½).

Organism	Carbon Source	Energy Source	Examples
Chemoautotroph			
Photoheterotroph			
Photoautotroph			
Chemoheterotroph			

There are three mechanisms for the phosphorylation of ADP to produce ATP. Write the name of the mechanism that describes each of the reactions in the following table. **(3 ½).**

ATP Generated by	Reaction
a-	Utilizing radiant energy from sun to convert phosphorylate ADP to ATP
b-	Using energy from proton motive force to add phosphate ion to ADP
c-	Phosphoenolpyruvic acid → Pyruvic acid

5-a-Put the heads of the arrows in the following figure. (2 ½)



المستوى الثالث مجموعة بيولوجي و لافقاريات سلوميه حشرات) 2010 ع

Mansoura University
Faculty of Science
Zoology Department

جامعة المنصورة
كليـــة العلـــوم
قسم علم الحيوان

Second Term Examination (May 2010)

Educational year: Second Year Biology	Subject:
Time: 2 hours	Course (s): Coelomate Invertebrates and Entomology (Z 202)
Date: 22 **June** 2010	
Program:	Full Mark: 60 Marks

Answer <u>Three only</u> of the flowing :

Q1- Mark the wrong (X) and the correct (√) sentences of the following: [20]Marks

1- The bivalved carapace of *Daphnia* is completely similar that of *Cypris*.

2- The shell in Mollusca has an important rule in their Classification.

3- The genital openings in Allolophora are found in segment 14 for male and 15 for female.

4- There is a proboscis in *Nereis* and *Hirudo*, while there is a clitellum in *Hirudo* and *Allolobophora*.

5- In *Scolopendra* the terga of segments containing stigmata are larger than those of segments without stigmata.

6- Cirripeds are hermaphrodites.

7- All mollusks have a radula except those of bivalves.

8- Arachnids get their food in a liquefied state.

9- The development in *Scolopendra* is epimorphic, while it is anamorphic in *Iulus*.

10- All gastropods are characterized by torsion of visceral mass and most of them have spiral coiling of shell.

11-Metamorphosis in insects provides more dispersal and less food competition

12-Pollen brush of food collecting leg is modified from first tarsal segment

13-Bees have a direct benefit of cross pollination and an indirect benefit of venom

14-The antennae of most male moths are from the type bipectinnate

15-Setae of cockroach maxilla act as a sieve of food particles

16-Stalked eyes is a distinguishing characteristic in insects

17-Hind wing of giant water bug is from the hemelyteron type

18-Arthropods are triploblastic coelomate animals with bilateral symmetry

19-Stylate antenna subsegments are blade like with a pointed tip resemble scalpel

20- Halteres are for balance when insects fall in fluids to avoid sinking

Q2- What do you know about each of the following: [20] Marks

A) Ostracoda and Branchiopoda **[5] Marks**

B) Per-Oral appendages, Ommatidium and mode of vision of the prawn. **[5] Marks**

C) Complete the following: **[10] Marks**

1- Galeae of maxillae are modified to the …………… of butterfly

2- ………..….. wing is represented in the second wing of most insects

3- Prey mantis has …………… legs and an indirect benefit of ………………..

4- Olfactory and tactile ..... on the antennae are advanced sense organs
5- Clavate antenna has terminal subsegments ..... enlarged
6- ..... is a mode of reproduction in which larvae produce larvae
7- ..... of cockroach corresponds the second maxilla of prawn
8- Thoracic dorsal and ventral sclerites are ..... and .....

Question Three: [20] Marks

A) Compare between: **[7] Marks**

1-Three classes of Phylum Annelida.

2- Annelelida and Arthropoda.

3- Male and female *Neptunus*, *Artemia* and *Cyclops*.

B) General characters and classification of Mollusca. **[6] Marks**

C) Illustrate with only labeled drawings each of the following: **[7] Marks**

1- *Heterometra* 2- *Sepia* and *Octopus*

3- Itch-mite- of man 4- *Lepas* and *Balanus*

5- The digestive systems of *Allolobophora* and *Hirudo*.

Question Four: [20] Marks

A) Write on the following: **[12] Marks**

1- Gastric mill

2- Locomotion and Reproduction of Allolobopora.

3- Illustrate shells of *Acanthopleura*, *Eremina*, *Anodonta* and *Sepia*.

B) Mark the wrong (X) and the correct (√) sentences of the following: **[8] Marks**

1- Nauplius larva is the familiar crustacean larva.

2- The capitulum in some Cirripeds is bilaterally compressed.

3- The scorpion has 12 eyes, while the wolf spider has 8 eyes.

4- The capitulum of Acarines is anteriorly subterminal in all of them.

5- In Plecypods, the foot is axe-shaped and bilaterally compressed.

6- In cephalopods, there is a deviation in position of the soft parts of the animals as the visceral mass becomes lateral, while the foot becomes anterior.

Examiners:

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مع أطيب التمنيات بالتوفيق ،،،