المستوى: الأول المقرر : رياضيات أساسية (2) كود المادة : تفاضل وتكامل(ر112)	كلية العلوم – قسم الرياضيات	دور مايو 2014 الزمن: ساعتان التاريخ : 17 /2014/5

برامج : كيمياء – كيمياء حيوية- كيمياء حيوان --كيمياء نبات- علوم بيئة- ميكرو بيولوجي --جيولوجيا - جيوفيزيقا

أجب عن الأسئلة الآتية: **الدرجة الكلية :** 80 درجة

[1]- أ) اوجد مجال تعريف كل من الدوال الآتية : $f(x)=\sqrt{x^2+1}$, $g=\sqrt{x+2}$ وحدد ما اذا كانت زوجية ام فردية ثم اوجد $f\circ g$ (8 درجات)

ب) أوجد النهايات الآتية : (12 درجات)

$$i)\ \lim_{x\to 0}\frac{x^2}{1-\cos 2x} \qquad ii)\ \lim_{x\to 0}\frac{e^x-e^{-x}}{2x} \qquad iii)\ \lim_{x\to 2}\frac{x^3-8}{\sqrt[3]{x}-2}$$

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[2]- أ) اوجد مجال تعريف الدالة $f(x)=\frac{3x+2}{2x-5}$ وبين أن هذه الدالة لها معكوس وأوجده.

(10درجات)

ب) أوجد ميل المماس للمنحنى $y=x^3-6x+1$ ثم اوجد النقاط التى يكون عندها المماس موازيا للمستقيم $3x+y=5$ (10 درجات)

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[3]-أ) اذا كانت : $f(x)=\frac{x^2}{(x+1)}$ اوجد $f'''(x)$ عند x=1 (8 درجات)

ب) احسب التكاملات الآتية: (12درجة)

$$i)\ \int\frac{\cos\sqrt{x}}{\sqrt{x}}\,dx \qquad ii)\ \int_0^3\frac{(x+1)(x+3)}{x}\,dx \qquad iii)\ \int(1+\tan x)^3\sec^2 x\,dx$$

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[4]-أ) اوجد $y'=\frac{dy}{dx}$ لكل من الدوال الآتية: (12درجة)

$$i)\ y=x^{\sin x} \qquad ii)\ y=e^{\cos 2x}\ln(x^3+1)$$

$$iii)\ y=e^{3x^2}\tan\sqrt{x^2+5} \qquad iv)\ x^2+x\sin y=y\,e^x$$

ب) اوجد قيمة التكاملات الاتية: $i)\ \int\frac{\cos x}{\sqrt{5+\sin x}}dx$ $ii)\ \int\frac{\ln x}{x}dx$

(8 درجات)

مع أطيب التمنيات بالنجاح

Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Chem.131 Principles of Organic Chemistry		Second Term Semester 1st Level Chem./Biochem. Students Date:03/06/2014 Time allowed: 2 Hours Full Mark: 60 Marks

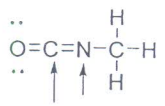
Answer the FOLLOWING questions:

[1] (a) Multiple choice. Circle the one best answer. (2 points each) [12 Marks]

1. Ammonium chloride (NH_4Cl) is a molecule in which the Nitrogen atom is _____ hybridized and the HNH bond angle is _____.

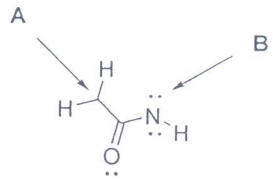
A) sp^2, 180° B) sp^2, 120° C) sp^3, 109° D) sp^3, 120° E) sp, 180°

2. From left to right , what is the hybridization of the carbon and nitrogen atoms in the compound below?



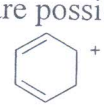
A) sp^3, sp^2 B) sp^3, sp^3 C) sp^3, sp D) sp, sp^3 E) sp, sp^2

3. Assign any formal charges to the carbon atom (A) and nitrogen atom (B) in the following structure respectively.



A) -1 and +1 B) 0 and +1 C) 0 and -1 D) -1 and -1 E) +1 and -1

4. How many other resonance structures are possible for the substance below?



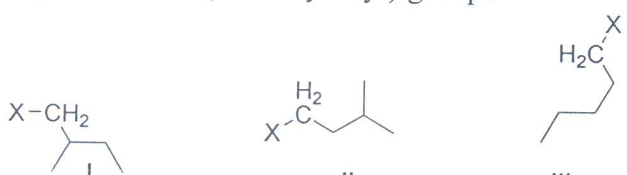
A) two B) three C) four D) five E) none

5. Which of the following structures represent the same compound?

I II III IV

A) I and II B) II and IV C) I and III D) I and IV E) III and IV

6. Which of the following represents the (2-methybutyl) group?



I II III

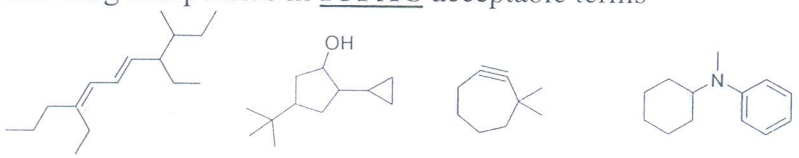
A) I only B) I and II C) I and III D) II only E) III only

[2] (a) The N-F bond is more polar than N-H bond, but NF_3 has a smaller dipole moment than NH_3. Explain? [5Marks]

NH_3	NF_3
μ = 1.5 D	μ = 0.2 D

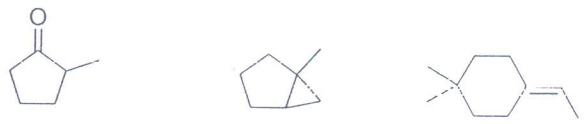
PLEASE TURN TO NEXT PAGE

(b) Name the following compounds in **IUPAC** acceptable terms [12 Marks]



I II III IV

(c) Label each hydrogen atom in the following compounds as primary (1°), secondary (2°), or tertiary (3°): [6 Marks]



I II III

[3] (a) Draw all the other resonance structures for the following structures using arrow-pushing [4 Marks]

I. NO_3^-
II. $^-CH_2$-CN
III. $^+CH_2$-NH_2
IV. NH_2-CH=CH-CH_2^+

(b) For each of the following compounds: [8 Marks]

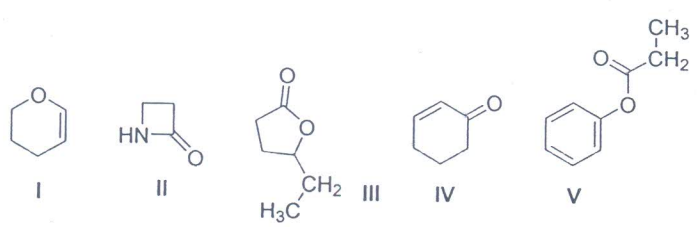
1. Draw the Lewis structure.
2. Count of bonding electrons, non bonding electrons, single bonds, π-bonds

I. CH_3COOH
II. CO_2
III. CH_3CN
IV. HNO_2

[4] (a) Draw the structures of the following compounds: [8 Marks]

I. 1,1,2,2,3,3,4, 4-octamethylcyclobutane
II. 4-sec-butyl-5-cyclopentylnonane
III. 2-(3-Oxobutyl)cyclohexanone
IV. 1,2,3-Trimethoxypropane

(b) Circle the functional groups in the following structures. State to which class (or classes) of compounds the structure belongs. [5 Marks]



I II III IV V

Best wishes

Examiners: Prof. Dr. E. B. Moawad Dr. Ahmed Fekri

جامعة المنصورة كلية العلوم قسم الرياضيات الزمن : ساعتان	الفصل الدراسي الثاني	المستوى الأول: جيولوجيا – ميكروبيولوجى المادة : علم الحاسب (ع ١٠١) التاريخ: 7- 6 - 2014

أجب عن الأسئلة التالية:

السؤال الأول

أ- أوجد قيمة X في كل مما يأتي كل جزئية (درجتان)

(i) $(59.125)_{10} = (X)_2$ **(ii)** $(245.5)_8 = (X)_{10}$

(iii) $(A15.8)_{16} = (X)_2$

ب- أوجد قيمة X في كل مما يأتي (قم بالتحويل بعد إجراء العملية الحسابية في النظام المعطى) كل جزئية (٤ درجات)

(i) $(63.4)_8 \times (72)_8 = (X)_{16}$ **(ii)** $(32AF1.B3)_{16} + (A152.5)_{16} = (X)_8$

(iii) $(110101.101)_2 - (10101.1011)_2 = (X)_8$

السؤال الثاني كل جزئية (٧ درجات)

أ- ارسم مخطط سير العمليات ثم اكتب برنامج QBASIC مستخدما while.....wend لإيجاد حاصل الضرب

$$F = 2^2 \times 5^2 \times 8^2 \times \ldots\ldots \times (20)^2$$

ب- ما هي مخرجات البرنامج التالي:

```
A = 1 :  B = 1
PRINT A; B;
FOR I = 3 TO 10
C = A + B
PRINT C;
A = B   :  B = C
NEXT I
 END
```

ج- ما هي مخرجات البرنامج التالي:

```
      X = 5  : Y = 1
      Z = 1
10    Z = Z*(X - Y)
      Y = Y + 1
  IF Y < X  THEN GOTO 10
     PRINT Z, X, Y
      END
```

من فضلك اقلب الورقة

السؤال الثالث كل جزئية (٧ درجات)

أ- ارسم مخطط سير العمليات ثم اكتب برنامج بلغة QBASIC ليحسب المجموع

$$S = \frac{1}{2} - \frac{3}{4} + \frac{5}{6} - \ldots\ldots + \frac{51}{52}$$

ب- ما هي مخرجات البرنامج التالي:

```
FOR I = 1 TO 4
  FOR J = 1 TO 4
   a = 5 * I + J
   PRINT a;
   NEXT J
PRINT
NEXT I
END
```

ج- أوجد ناتج كل مما يأتي مع بيان أولوية التنفيذ

(i) ((-4 + 3) * 6 - 4 ^ 2) / (6 + 5) * 3 ^ 3

إذا كانت Q = 3 and R = 5

(ii) NOT (Q = 7 OR R <> 5) AND Q + 3 * R = 0 OR R >= 0

GOOD LUCK

DR. NOURA FAKHRY *Dr. MOHAMED ABD EL-RAHMAN*

Mansoura University Faculty of Science Chemistry Department Subject: General & Inorganic Chemistry Code No: Chem (121)	كلية العلوم جامعة المنصورة	Second Term First Level (Chem. & Biochem.) Program Students Date : 14 June ,2014 Time Allowed: 2 hours Full Mark : 60 Marks

Answer The Following Questions

1. A) Choose the correct answer : [3 Marks]

i) Which one the following electronic configurations is incorrect ?

a) O(Z=8) $1s^2\ 2s^2\ 2p^4$ b) Ge(Z=32) [Ar] $3d^{10}\ 4s^2\ 4p^2$

c) Sc(Z=21) [Ar] $3d^2\ 4s^1$ d) C(Z=6) [He] $2s^2\ 2p^2$

ii) The atomic number of an atom is the number of ..... in the atom.

a) Protons , b) Neutrons , c) Protons + electrons , d) Proton + neutrons.

iii) The element with electronic configuration $1s^2\ 2s^2\ 2p^3$ is .....

a) in the second period , b) in the fifth group , c) a p-block element

d) Nitrogen , e) All the above are correct.

B) Draw the Lewis structure and calculate the formal charge for the following : [9 Marks]

i) HNO_3 ($_1H$, $_7N$, $_8O$), ii) $POCl_3$ ($_8O$, $_{15}P$, $_{17}Cl$)

iii) SO_2 ($_{16}S$, $_8O$)

C) Complete the following statements : [8 Marks]

i) On the basis of VSEPR theory (BF_3) has ..... structure with bond angle equal to ..... , **while** (SF_6) has ..... structure with bond angle equal to ..... ($_5B$, $_{16}S$)

ii) From Born – Haber cycle for **NaCl** :

ΔH_f = (..... + ... + ... + ... + ...)

iii) The electronegativity is ....., **while** the electron affinity is .....

iv) (.....) is an example of ionic compounds, (.....) is an example of polar covalent compounds, **while** ..... is an example of non-polar covalent compounds.

2.A) Write (✓) or (X) on the following statements, then give reason for your answer : [8 Marks]

i) The order of increasing the atomic size is : ($_{11}Na > {}_3Li > {}_{19}K$).

ii) The Polarity of the bond increases as follows : C-N> C-O> C-F. ($_6C$, $_7N$, $_8O$, $_9F$)

iii) The first ionization energy of nitrogen is less than that of oxygen. ($_8O$, $_7N$).

iv) $BeCl_2$ molecule has a linear structure. ($_4Be$, $_{17}Cl$) .

B) Which species gives the property indicated : [6 Marks]

i) Be or B is higher in ionization energy.
ii) K or K^+ is smaller in size .
iii) CO_2 or SO_2 is a polar molecule.

C) Write short notes on the following and use a suitable example : [6 Marks]

i) Pauli exclusion principle .
ii) Hund's rule.
iii) Types of elements.

3.A) Write the electronic configuration and deduce the four quantum numbers of the last electron in the following atoms (ions): **Fe^{3+}, Na ,N. ($_{26}Fe$, $_{11}Na$, $_{7}N$). [12 Marks]**

B) Draw the digram of the relation between the electron transitions and the spectral lines of the hydrogen atom. **[3 Marks]**

C) Calculate the wave length (λ, nm) and frequency (ν, s^{-1}) of the line in the hydrogen spectrum corresponding to electron transition from (n=5 to n=2). Does this line occur in the visible region ?. **(Rydberg's constant = 109678 cm^{-1} , velocity of light (c) =$3x10^8$ m/s , Plank's constant(h) = 6.63 x 10^{-34} J.s , A = 2.18 x10^{-18} J).** [5 Marks]

Best Wishes

Examiners : Prof. Magdy M. Bekheit Prof. Tawfik H. Rakha

مجموعة السيتولوجي + الكيمياء الحيوي
أساسيات علم وظائف الأعضاء (B.C 102)

Mansoura University
Faculty of Science
Botany Department

جامعة المنصورة
كلية العلوم
قسم النبات

Final Examination in Botany
Second Term: May 2014

Educational Year: 1st Level **Program : Biology**
Courses: Basics of plant Physiology
Subject: (B 102) **Time :2 hrs** **Date: 10/6/2014** **Full mark: 60**

Answer the following questions:

ملحوظه: مراعاة تسلسل الاجابة كما هو فى الاسئلة.

Group (A): Colloids, Osmosis & Permeability: (30 Marks)

I: (10 Marks)

1- Viscosity, Brownian movement, Dialysis and Adsorptive power (Definition only) (4 Marks)

2-Discuss each of the following: (6 Marks)

a- Electrical properties of colloids.

b- Reversible and irreversible flocculation of colloids.

II: (10 Marks)

1- Discuss brie ly each of the following:

a- The role of osmosis in plant life. (2.5 Marks)

b- Dynamic of water movement between plant cells. (3.5 Marks)

c- The changes in osmotic parameters of a living plant cell when immersed in water only. (Write the equation)(4 Marks)

III: (10 Marks)

1- Brie ly discuss the permeability of the plasma membrane to electrolytes. (5 Marks)

2- Put right (√) or wrong (x) for the following sentences and correct the wrong: (5 Marks)

a-The permeability of non-electrolytes through protein part of plasma membrane. ( )

b- Decrease in pH, decrease in absorption of anion. ( )

c- Complete absence of oxygen, increase the permeability of cells. ( )

d- At high concentration of chloroform a reversible increase in permeability. ( )

e- Antagonism between Na^{+} & Ca^{+2} owing to competition at active sites on carriers. ( )

Group (B): Plant water relationships & Enzymes: (30 Marks)

I: (15 Marks)

1- True/False Question: Answer the following questions True (T) or False (F): (5 Marks)

a- Root pressure theory explains the ascent of sap in tall trees than 100 meters.

b- Increase in soil temperature stimulates the absorption of water from soils.

P.T.O.(من فضلك اقلب الصفحة)

c- Rate of transpiration increases with increase in the relative humidity.
d- Sand holds water more tightly than clay.
e- Closed guard cells are turgid.

2- Fill-in-the-Blank: For each of the following treatments, indicate if it will cause the guard cells to open (O) or close (C) the stoma: (5 Marks)

a-		ABA
b-		Light
c-		High (carbon dioxide) in the leaf
d-		Low pH in the cytoplasm
e-		Violent wind

3- Complete the following: (5 Marks)
a- Transpiration is the loss of water in the form of water vapour through ....., ...and.....
b- Guttation is the loss of water in the form of water droplets from .....
c- Stagnant wind .....the rate of transpiration.
d- K^+ efflux induces stomatal .....
e- Water absorbed from soil solution by ..... and ..... mechanisms.

II: (15 Marks)
1- Explain the action of the following enzymes groups referring to de inition, one example & the equation of this example: (6 Marks)
a- lyases. b- dehydrogenases.
c- Esterases. d- Transferases.

2-Write in details an account on: (4 Marks)
a- Effect of substrate concentration on enzyme action (with drawing).
b- Non-competitive inhibitors (with examples).

3- Complete the following: (3 Marks)
a- Enzyme may be defined as.....
b- Temperature increases the rate of enzymatic reaction because of .....
c- Turnover number is defined as.....
d- Catalase is an enzyme which catalyzes.....
e- Accumulation of end products decreases the rate of enzymatic reaction due to .....
f- Most of the plant enzymes are contained in .....

4- Correct the following sentences: (2 Marks)
a- Mg^{+2} is an activator for the reaction of pyruvate kinase.
b- Minimum temperature is the degree at which the best yield of products will be produced from the substrate.
c- Peroxidase is an enzyme which catalyzes the oxidation of phenolic compounds by removing two hydrogen atoms in presence of atmospheric oxygen.
d- $CH_3\text{-}COOH + Co\text{-}A\text{-}SH + ATP \longrightarrow Co\text{-}A\text{-}S\text{-}CO\text{-}CH_3 + AMP + H_4P_2O_7$

Examiners:

Prof, Samy A. Abo-Hamed **Prof. Heshmat S. Aldesuquy**
Prof. Wafaa M. Shukry **Dr. Rasha M. Eid Gamel**

كهرومغناطيسية + ضوء (ف١٠٢) الجيولوجيا الكيمياء
الجيوفيزياء - الكيمياء الحيوية - مجموعة البيولوجي

Mansoura University
Faculty of Science
Department of Physics

Time Allowed: 2 h
Date: 31 / 05 / 2014
All Programs, 2 h.
Full Mark: 60

Second Term Exam 2013-2014
Physics (102)

Constants: $K=8.99x10^9 (N.m^2/C^2)$, $\epsilon_o=8.85x10^{-12} (C^2/N.m^2)$, $q_e=-1.6x10^{-19} C$, $\mu_o=4\pi x10^{-7}$ T.m/A

PART – I: MCQ [12 Marks]

Conceptual Questions (from 1 to 12 : each of 1.0 Mark)

- *Do not give more than one answer to a question.- Copy the table below in your answer sheet.*

Question	1	2	3	4	5	6	7	8	9	10	11	12	Total(12)
Answer													

1) Which of the following is not a vector?
A) electric force B) electric field C) electric potential D) electric line of force

2) Electric dipoles always consist of two charges that are
A) equal in magnitude; opposite in sign. B) equal in magnitude; both are negative.
C) equal in magnitude; both are positive. D) unequal in magnitude; opposite in sign.

3) Doubling the capacitance of a capacitor holding a constant charge causes the energy stored in that capacitor to
A) quadruple. B) double. C) decrease to one half. D) decrease to one fourth.

4) Sphere A carries a net positive charge, and sphere B is neutral. They are placed near each other on an insulated table. Sphere B is briefly touched with a wire that is grounded. Which statement is correct?
A) Sphere B is now negatively charged, B) Sphere B is now positively charged. C) Sphere B remains neutral,
D) The charge on sphere B cannot be determined without additional information.

5) A negative charge is moved from point A to point B along an equipotential surface.
A) The negative charge performs work in moving from point A to point B.
B) Work is required to move the negative charge from point A to point B.
C) Work is both required and performed in moving the negative charge from point A to point B.
D) No work is required to move the negative charge from point A to point B.

6) A solid block of metal in electrostatic equilibrium is placed in a uniform electric field. Give a statement concerning the electric field in the block's interior.
A) The interior field points in a direction opposite to the exterior field.
B) The interior field points in a direction that is at right angles to the exterior field.
C) The interior points in a direction that is parallel to the exterior field.
D) There is no electric field in the block's interior.

7) A charged particle is injected into a uniform magnetic field such that its velocity vector is perpendicular to the magnetic field vector. Ignoring the particle's weight, the particle will
A) move in a straight line. B) follow a spiral path. C) move along a parabolic path. D) follow a circular path.

8) The resistivity of a wire depends on
A) its length. B) its cross-sectional area. C) the material out of which it is composed. D) all of the given answers

9) An electric current produces
A) a gravitational field. B) an electric field. C) a magnetic field. D) an electromagnetic field.

10) The direction of the force on a current-carrying wire in a magnetic field is described by which of the following?
A) perpendicular to the magnetic field only B) perpendicular to both the current and the magnetic field
C) perpendicular to neither the current or the magnetic field D) perpendicular to the current only

11) The force on a current-carrying wire in a magnetic field is equal to zero when
A) the current is parallel to the field lines. B) the current is at a 30° angle with respect to the field lines.
C) the current is at a 60° angle with respect to the field lines. D) the current is perpendicular to the field lines.

12) A capacitor stores charge Q at a potential difference ΔV. If the voltage applied by a battery to the capacitor is doubled to $2\Delta V$
A) the capacitance falls to half its initial value and the charge remains the same
B) the capacitance and the charge both fall to half their initial values.
C) the capacitance and the charge both Double D) the capacitance remains the same and the charge doubles

---

PART II [30 Marks]

Instructions for Short Answer Questions :

- *To get full marks you have to show all necessary work and Simplify your answer when possible*

1) State the Biot-savart law in magnetizm. *(3 marks)* 2) define the electrical potential at a point *(3 marks).*

3) State the law of conservation of electric charge. *(4 marks)*

4) Compare between Electric and Magnetic Force. *(5 marks)*

5) State three reasons for adding a dielectric material between the plates of a capacitor. *(5 marks)*

6) Why can electric field lines never cross? *(5 marks)* 7) State and derive Ohm's Law. *(5 marks)*

PART III [18 Marks]

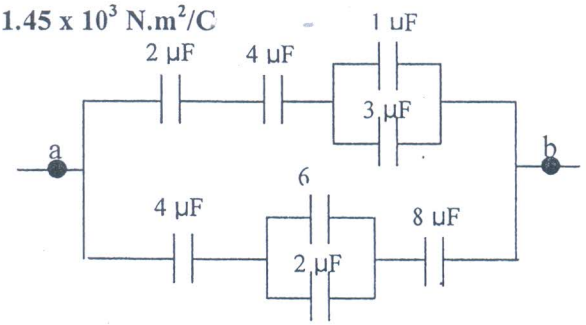
Instructions for long Answer Questions (from 1 to 6: each of 3 marks)

1) What are the magnitude and direction of the electric field at a point midway between a *(-8 μC)* and a *(+7 μC)* charge 8.0 cm apart?

2) The total electric flux from a cubical box 28.0 cm on a side is 1.45×10^3 N.m^2/C

What charge is enclosed by the box?

3) Find the equivalent capacitance between *a* and *b* for the combination of capacitors shown in Figure.



4) How much work does *9.0 V*

do in moving 8.5×10^{18} electrons?

5) *A 15 μF* capacitor is connected to a *50 V* battery and becomes Fully charged. The battery is removed and a slab of dielectric that completely fills the space between the plates is inserted. If the dielectric has a dielectric constant of 5.0, what is the capacitance of the capacitor after the slab is inserted?

6) An electric heater is constructed by applying a potential difference of 12 V to a wire that has a total resistance of 8 Ω . Find the current carried by the wire and the power rating of the heater.

Prof. Dr. Nair Ahmed Baker, *Prof. Dr. Moustafa Tawfik Ahmed,*
Ass. Prof. Maysa Abd-Elhamed ,
Dr. Nagah El-Sheshaty, *Dr. Afaf Sarhan,* *Dr. Amal El-Sshaway*