المستوى الأول - كيمياء - بلورات ومعادن ع ١٠٢

Mansoura University
Faculty of Science
Geology Department

SummarTerm Exam (August, 2013)
First Level (Chemistry Programme)
Subject: Crystallography &Mineralogy
Code of Subject:G 102
Full Mark: 60 degree Time: 2 hours
Date: 26-8-2012

أجب عن الأسئلة الآتية:

أولا: البلورات

السؤال الأول: أكتب ماتعرفة عن الآتى:- (١٥ درجة)

١-قارن بين فصيلة المعينى القائم وفصيلة الرباعى من حيث المحاور البلورية وعناصر التماثل .

٢-أذكر أجزاء البلورة .

٣-عرف الإحداثيات والمعاملات.

٤-أساس تقسيم البلورات إلى فصائل .

٥-أذكر الفرق بين القبه والهرم المنعكس ، المنشور والمسطحات من حيث عدد الأوجه والمعاملات.

السؤال الثانى: أذكر فقط:- (١٥ درجة)

١-الأشكال البلورية فى فصيلة المعينى القائم مع ذكر قانون التماثل .

٢-الأشكال البلورية فى فصيلة الرباعى مع ذكر قانون التماثل .

٣-الأشكال البلورية فى فصيلة المكعب مع ذكر قانون التماثل .

بقية الأسئلة خلف الصفحة

المستوى الأول - كيمياء - الشكل النظامي ح ٢٢

Mansoura University
Faculty of Science, Zoology Department
Summer Course Examination 1st level Chemistry Program Z122
28th August 2013, Time two hrs 60 marks

First Question

Answer as shown between brackets: (10 marks)

1- Lipolysis (mention the enzyme involved and the suitable medium).
2- Valine is non essential amino acid (correct if false).
3- Peptide bond connect 2 glucose unit with the removal of 2 molecules of H_2O (correct if false).
4- Water soluble vitamins (give example).
5- Retinol is the alcohol form of Retinoid (correct if false).
6-Calcium is important for ……formation.(complete).
7-Phospholipid consists of one molecule of ……., two molecules of fatty acids and one …….group. (complete)
8- Fibrinogen is very important for immunity (correct by 2 ways)
9- Albumin is synthesized in bone marrow (correct)
10- White blood cells are nucleated cells(correct if false)
11- Granulocytes can be divided into ……..,……and…….(complete)
12-Trachea is kept open by incomplete ring of ……..(complete)
13- Exchange of respiratory gases between air in lungs and blood in pulmonary capillaries (give scientific name)
14- The chemical name of vitamin D is ……..(complete)

Second Question

Write notes on FIVE of the following: (20 marks)

1- Function of saliva.
2- Hormonal control of digestive secretions.
3- Functions of the blood.
4- Structural functions adaptation of RBCs.
5- Mechanism of hemostasis.
6- Functions of respiration.
7- The Bile (synthesis, constituent and functions)

انظر خلفه

Third Question

A- Give an account on the following: (20 marks)

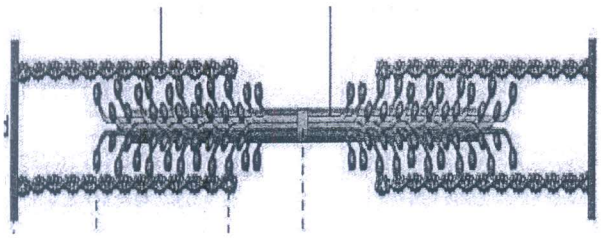
1- Action potential in Nervous system.

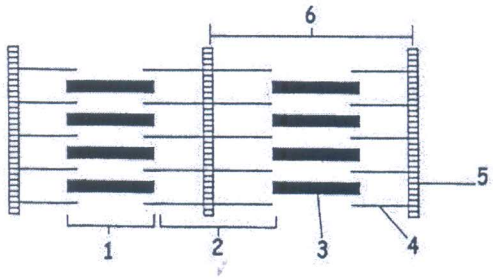
2- Functions of Nephron.

3- Growth hormone.

4- Hormonal control of kidney functions

B- Labelle this diagrams and explain the mechanism of muscle contraction. (10 marks)





Best wishes

Prof. Gamal Edrees , Prof. Azza Othman

Mansoura University Faculty of Science Physics Department	Summer Exam, 2013 ***Physics***	1st Year Phys 101 Time allowed: 2 h

Answer the Following Questions marks

1. **(a)**What is the temperature change of 25 °C in both °F and °K scale? [6]
   (b)A 50 gram of a metal is heated to 200 °C and then dropped into a beaker containing 400 gram of water initially at 20 °C. If the final equilibrium temperature is 28 °C, find : [9]
   i)The specific heat of metal.
   ii)The total heat transferred to the water in cooling the metal.

2 **(a)** If 5 m^2 from the sun surface radiate 3.69 x 10^8 J/m^2sec, Calculate the sun temperature (Stefan`s constant is 5.7 x10-8 W/m^2K^2). [7]
(b) A brass disk has a hole 80 mm in diameter punched in its center at 82 °F. If the disk is placed in boiling water, what will be the new area of the hole? [8]
(coefficient of linear expansion α for brass = 9.75 x10^{-6} F^{-1})

3 **(a)** The acceleration ,a, of a particle moving with uniform speed v in a circle of radius r is given [4]

$$a = k\, r^{\alpha} v^{\beta}$$

determine the values of α and β.
(b)A steel wire of length 250 cm, its mass 15 gm and density 7.5 gm/ cm3. The elongation is 2mm, when 10 kgm is hung on the wire, calculate Young`s modulus. [7]
(c) Calculate the acceleration due to gravity at a point at 300 km from the earth`s surface (the diameter of the earth 1.275x10^7m). [4]

4. **(a)** At certain point in a pipeline the velocity is 1.5 m/sec and the pressure is 2 x10^5 Pa. Find the pressure at a second point in the line 4m lower than the first, if the cross section at the second point is one-half that at the first. The liquid in the pipe is water. [7.5]
   b) the position of a particle moving along the x-axis is given by [7.5]
   x = 0.08 sin (12t+ 0.3) m where t in second
   i) find the amplitude and period of the motion
   ii) Determine the position, velocity and acceleration at t = 0.6 sec.

المستوى الأول - كهربة ومغناطيسية وضوء ف ١٠٢

Mansoura University
Faculty of Science
Physics Department

Course code: Phys 102

September semester 2013
Date: 26-8-2013

1st Level students all Programs
Full Mark: 60
Allowed time: 2 hours
Course title:
Electricity, magnetism and optics

Answer the following questions: Marks

1- a- Calculate the electric field intensity at point P that is located at distance y on the vertical line at the mid-point of a dipole whose length is 2a. 8

b- A point charge Q is placed on the x- axis at x = 2.0 m from the origin. A second point charge, –Q, is placed at x = 3.0 m. If Q = 40 μC, what is the magnitude of the electrostatic force on a 30 μC charge placed at the origin? (K_e=9x10^9 N.m^2/C^2). 7

2- a- Define the following: 8

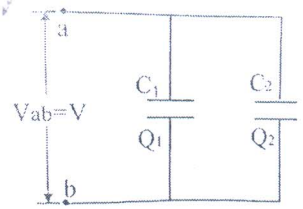
Coulomb's law – Gauss's law –Electric flux – Potential difference.

b- An insulating sphere of radius a has a uniform charge density ρ and total positive charge Q. Calculate the electric field intensity at a point outside the sphere, that is for r ⟩ a (inside the sphere) and r ⟨ a (outside the sphere). 7

3- a- Define the following: 8

refractive index -Huygens's principle– critical angle- optical path

In Figure, let C_1=6μF, C_2 =3μF and V_{ab} =18 volt. Find the equivalent capacitance, the charge and potential difference for each capacitor when the two capacitors are connected 7



i - In series ii- In parallel

4- a- Discuss how the liquid refractive index is measured using Pulfrich refractometer. 8

b- A green light of wave length 546 nm traveling in air and incident on a slab of transparent material. If the incident ray makes an angle 40° with the normal, and the angle of refraction is 26°. 7

a) Find the index of refraction of the material.
b) Find the wavelength of light in the material.
c) What is the frequency in the medium? (Velocity of light C =3x10^8 m/s)

Best wishes:

Dr Hany Kamal

Mansoura University Faculty of Science Chemistry Department Subject: Chemistry Course(s): Chem.131 Principles of Organic Chemistry		Summer Course 1st Level Chem./Biochem. Students Dat: 19/8/2013 Time allowed: 2 Hours Full Mark: 60 Marks

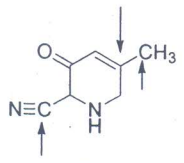
Answer the FOLLOWING questions:

[1] (a) Multiple choice. Circle the one best answer. (2 points each) [20 Marks]

1. Boron trifluoride (BF_3) is a molecule in which the boron atom is _____ hybridized and the FBF bond angle is _____.

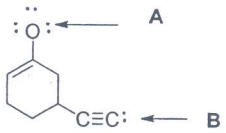
A) sp^2, 180° B) sp^2, 120° C) sp^3, 109° D) sp^3, 120° E) sp, 180°

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



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

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

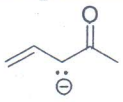


A) -1 and +1 B) –1 and –1 C) 0 and -1 D) -1 and 0 E) +1 and +1

4. Given a completed equation for the acid-base pair shown below. Which of the following represents acid/conjugate base pair in the reaction?

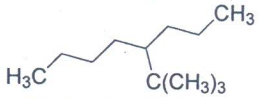
A) NH_2^-/NH_3 B) HCO_2H/HCO_2^- C) HCO_2^-/HCO_2H D) NH_3/NH_2^- E) none of these

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



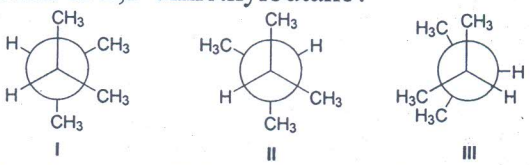
A) two B) three C) four D) five E) none

6. What is the correct IUPAC name for the compound pictured below?



A) 4- isopropyloctane B) 4- t-butyloctane C) 4-sec-butyloctane
D) 4-(2,2-dimethylethyl)heptane E) 5-t-butyloctane

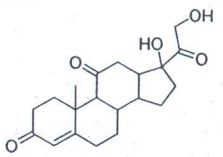
7. From the perspective of viewing down the C2- C3 bond, what is the Newman projection of the most stable conformation of 2,3-dimethylbutane?



I II III

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

8. Cortisone (steroid) reduces swelling and decreases the body's immune response. How many different functional groups are in the following structure of cortisone?



A) one B) two C) three D) four E) five

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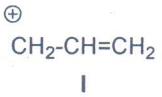
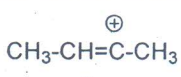
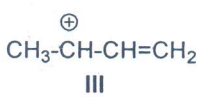
9. Which of the following is a primary alkyl halide?

A) methyl bromide B) isopropyl bromide C) *t*-butyl iodide D) cyclohexyl bromide E) isobutyl chloride

10. Which of the following represents allylic carbocation?


I

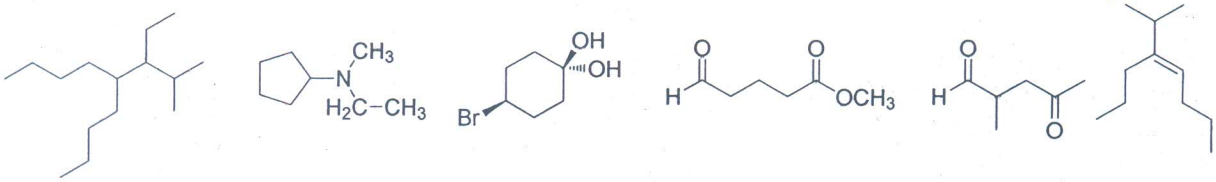

II


III

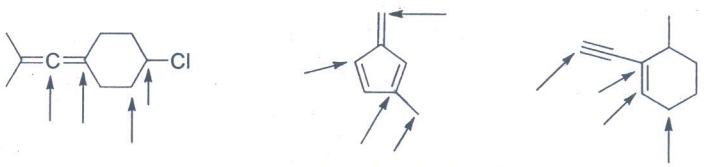
A) I only B) I and II C) I and III D) II only E) III only

[2] **(a)** If 2-methylpropane is brominated at 125 °C in the presence of light, what percent of the product will be 2-bromo-2-methylpropane? Compare your answer with the percent obtained in chlorination to give the same product. [4 Marks]

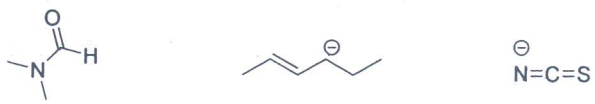
(b) Name the following compounds in **IUPAC** acceptable terms [6 Marks]



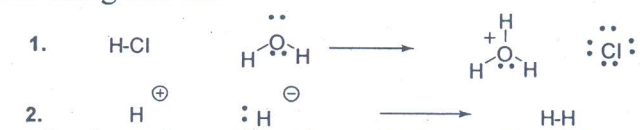
(c) Determine how many unshown hydrogens are bonded to each of the indicated carbon atoms. [6 Marks]



[3] **(a) Draw** all the other resonance structures for the following structures using arrow-pushing [6 Marks]



(b) Label the Lewis acid and Lewis base in the following reaction. Then show the mechanism of the acid-base reaction using arrows. [4 Marks]



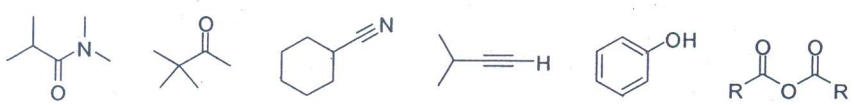
(c) Using a Newman projection, draw the all possible conformation structures for pentane, sighting down the C_2-C_3 bond. Sketch approximate potential energy diagram. [2 Marks]

[4] **(a)** Which is the **stronger acid** in the following pairs. Explain your answer [6 Marks]

(I) Phenol or *p*-hydroxybenzaldehyde (III) *o*-Fluorophenol or *p*-fluorophenol

(II) *m*-Cyanophenol or *p*-cyanophenol

(b) Name the general class of organic compounds that each of these molecules belong to [6 Marks]



Best wishes

Examiner: Dr. Ahmed Fekri

المستوى الأول - تفاضل وتكامل ر ١١٢ كيمياء

جامعة المنصورة كلية العلوم قسم الرياضيات	المستوى الأول المادة: تفاضل وتكامل كود المادة: ر١١٢ برامج : الكيمياء - الكيمياء الحيوية - كيمياء وحيوان -كيمياء ونبات - جيولوجيا - جيوفيزياء - ميكروبيولوجى - علوم بيئة	الفصل الدراسي الصيفى دور سبتمبر ٢٠١٣ الزمن : ساعتان التاريخ:السبت: ٢٠١٣/٨/١٧ الدرجة الكلية : ٨٠ درجة

أجب عن الأسئلة الآتية

السؤال الأول: (٢٠ درجة)

(١) عين المجال والمدى للدوال الآتية:

$g(x) = \sqrt{x-3}$, $f(x) = \sqrt{x^2-25}$ ثم أوجد gof , fog. (١٠ درجات)

(٢) أوجد المجال والمدى للدالة $f(x) = \frac{x-2}{x+1}$ ، ثم إثبت ان لها معكوس واوجده. (١٠ درجات)

السؤال الثانى: (٢٠ درجة)

(١) إحسب النهايات الآتية: (١٢ درجة)

$(i)\ \lim_{x\to 0} \frac{e^{2x}-1}{x}$, $(ii)\ \lim_{x\to 0} \frac{1-cos2\,x}{x^2}$

$(iii)\ \lim_{x\to \infty} \left(\frac{x+3}{x}\right)^x$, $(iv)\ \lim_{x\to 0} \left(\frac{1}{x} - \frac{1}{sin\,x}\right)$

(٢) أوجد قيمة الثابت A لكى تكون الدالة الأتية متصلة عند $x = 0$. (٨ درجات)

السؤال الثالث: (٢٠ درجة)

(١) أوجد المشتقة الأولى للدوال الاتية: (١٢ درجة)

$(i)\ x^2 + x\,sin^{-1}y = y\,e^x$, $(ii)\ y = (sin\,x)^x$

$(iii)\ y = e^{-3x}\ ln(x^3+1)$, $(iv)\ y = tan^3(5x^2+1)$

(٢) أوجد معادلتى المماس والعمودى للمنحنى $y = x^3 - 2x^2 - 3$ عند النقطة $(x_0, y_0) = (1, -4)$.

(٨ درجات)

السؤال الرابع: (٢٠ درجة)

إحسب التكاملات الآتية:- (كل جزء ٤ درجات)

$(i)\ \int cos^4 x\ sin^3 x\,dx$, $(ii)\ \int_0^1 (x^3+1)^3\ x^2\,dx$

$(iii)\ \int \frac{e^{tan^{-1}x}}{1+x^2}\,dx$, $(iv)\ \int_0^{\pi} cos^2(3x)\,dx$, $(v)\ \int x^2\,e^x dx$

انتهت الأسئلة ،،، مع التمنيات بالنجاح والتفوق ...

أسرة التدريس...