| المستوى: الاول<br>المادة : تفاضل وتكامل<br>كود المادة: ر 112<br>الدرجة الكلية:80 درجة | كلية العلوم – قسم الرياضيات<br>برنامج: (جميع برامج المستوى الاول) | دور مايو 2015<br>الزمن: ساعتان<br>التاريخ : 16 / 5/ 2015 |
|---|---|---|

## اجب عن الاسئلة الاتية

**السؤال الاول: (20 درجة)**

(ا)- أوجد مجال تعريف كلا من الدالتين $f(x)=\frac{1}{\sqrt{16-x^2}}$ و $g(x)=x^2+5$ ثم أوجد دالتى التحصيل $(f\circ g)(x)$ و $(g\circ f)(x)$ (10 درجات)

(ب)- إحسب النهاية التالية $\lim_{x\to 0}(1+\sin x)^{\cot x}$ (5 درجات)

(ج)- أوجد قيمة الثابت $c$ التى تجعل الدالة الآتية متصلة عند $x=0$ (5 درجات)

$$f(x)=\begin{cases}\dfrac{1-\cos x}{x^2} & x\neq 0\\ c & x=0\end{cases}$$

---

**السؤال الثانى : (20 درجة)**

أوجد المشتقة الاولى $\frac{dy}{dx}$ للدوال الآتية:

(1)- $y=e^{-2x}\ln(x^3+1)$

(2)- $5x^2y-3y^2+2=0$

(3)- $y=e^{\tan^{-1}(2x^2-1)}$

(4)- $y=\sin^3(3x^2+5)$

---

**السؤال الثالث: (20 درجة)**

إحسب التكاملات الآتية:

(ا)- $\int\frac{dx}{\sqrt{12+4x-x^2}}$

(ب)- $\int\frac{1}{x\ln x}dx$

(ج)- $\int\frac{x^2+2x-1}{2x^3+3x^2-2x}dx$

(د)- $\int(\sin x+\cos x)^2\,dx$

---

**السؤال الرابع: (20 درجة)**

(ا)- إحسب التكاملات الآتية:

(1) $\int x\tan^{-1}x\,dx$

(2) $\int_{-3}^{1}|x+2|dx$ (10 درجات)

(ب)- أوجد مساحة المنطقة المحددة بالمنحنيات الآتية (10 درجات)

$y^2=4x,\ y=2x-4$.

مع اطيب التمنيات بالتوفيق والنجاح

اسرة قسم الرياضيات

جامعة المنصورة
كلية العلوم

امتحان : مبادئ المحاسبة والإدارة
كود المادة : ع ١٠٦
الزمن : ٢ ساعات

امتحان / المستوى الأول الفصل الدراسي الثاني
للعام الجامعي ٢٠١٤_٢٠١٥
تاريخ الامتحان الثلاثاء الموافق 19/5/2015

---

**أجب عن الأسئلة التالية :**

**السؤال الأول : ( ٥٠ درجة )**

**أولاً : كلفت خلال العام الدراسى بالاطلاع على الدراسات المعاصرة فى بيئة عصر المعرفة حول حول ثورة النانو تكنولوجى ، وانترنت الأشياء ، وصناعة البرمجيات فى مجال التخصصات العلمية بكلية العلوم .. تناول فى حدود صفحتين فقط لاحد هذه التطورات.**

**ثانيا : بافتراض أن لدى إحدى المنشآت ثلاث بدائل هي س١ ، س٢ ، س٣ وأن حالات الطبيعة هي: ط١ ، ط٢، ط٣ وأن مصفوفة العائد تتمثل في :**

| الإستراتيجيات | حالات الطبيعة | | |
|---|---|---|---|
| | ط١ | ط٢ | ط٣ |
| | .٢٥ | .٥٠ | .٢٥ |
| س١ | ٨٠ | ٤٤ | -١٤ |
| س٢ | ١٨ | ٦٠ | ٣٢ |
| س٣ | -١٤ | ٢٤ | ٤٠ |

**والمطلوب :**

١- تحديد القيمة المتوقعة لكل إستراتيجية مع بيان أفضل إستراتيجية .

٢- تحديد القيمة المتوقعة للمعلومات الكاملة .

٣- وضح الاستراتيجية المثلى باستخدام المعايير التالية :

التفاؤل ، التشاؤم ، معيار الندم (الأسف).

**السؤال الثاني : ( ٥٠ درجة )**

**أولاً : ضع علامة ( ✓ ) أو علامة ( × ) أمام كل عبارة من العبارات التالية :**

١. يشير التنظيم إلى بيان إلى أين تريد المنظمة أن تصل مستقبلاً ، وكيف يمكنها تحقيق ذلك ؟ والتنظيم يعنى تحديد الأهداف المستقبلية وبيان المهام والأنشطة الواجب القيام بها لاستخدام الموارد والإمكانات المتاحة.

٢. تشير وظيفة الرقابة الى التأكد من عمليات التنفيذ ومدى مسايرتها لما تم التخطيط له.

٣. يمكن تعريف اتخاذ القرار بأنه الاختيار من بين عدة بدائل بقصد تحقيق هدف أو مجموعة من الأهداف.

٤. تتمثل المهارات اللآزمة لممارسة العملية الادارية فى المهارات الفكرية والانسانية والفنية.

٥. تعرف الإدارة الالكترونية بأنها العملية الإدارية القائمة على الإمكانات المتميزة للانترنت وشبكات الأعمال في تخطيط وتوجيه والرقابة على الموارد من أجل تحقيق أهداف الشركة.

٦. تتمثل قيمة المعلومة الكاملة في الفرق بين قيمة المعلومة في ظل عدم التأكد وقيمة المعلومة في ظل المخاطرة .

٧. ينتج صافى الربح نتيجة زيادة الايرادات على المصروفات.

٨. يتم الافصاح عن الأصول والالتزامات وحقوق الملكية فى المركز المالى.

٩. تقوم المحاسبة بكل فروعها على وظيفة أساسية هى وظيفتى القياس والافصاح.

اقلب الصفحة

**ثانيا**: فيما يلى بعض العمليات المتعلقة بمركز الدكتورة لينا عبدة أبو الفتوح الطبى خلال يناير ٢٠١٤ :

١ . فى أول يناير تم بداية النشاط باستثمار ١٠٠٠٠٠ج نقدا وأجهزة ومعدات طبية تبلغ قيمتها ٥٠٠٠٠ج .

٢ . فى ٢ يناير تم سداد مبلغ ١٠٠٠٠ج نقدا مقابل ايجار شهرين مقدم .

٣ . فى ٥ يناير تم شراء أثاث للمركز بمبلغ ١٢٠٠٠ جنيه نقدا.

٤. فى ١٧ يناير بلغ ايراد العمليات الطبية ٤٥٠٠٠ج للسيد / حاتم ابراهيم لم تحصل بعد.

٥ . فى ٢٠ يناير تم سداد رواتب العاملين بالمركز وقدرها ١٤٠٠٠ جنيه نقدا.

٦ . فى ٢٣ يناير تم تحصيل مبلغ ٢٥٠٠٠ج نقدا من المستحق على للسيد / حاتم ابراهيم.

٧ . فى ٢٦ يناير بلغ ايراد الكشف الطبى للمرضى ٦٠٠٠٠ج حصلت نقدا.

٨ . فى ٢٨ يناير تم فتح حساب جارى باسم المركز فى البنك الأهلى بمبلغ ٢٥٠٠٠ج.

٩ . فى ٣١ يناير تم سحب مبلغ ٥٠٠٠ جنيه للمصروفات الشخصية بشيك.

**والمطلوب**:

١. بيان أثر العمليات السابقة على المعادلة المحاسبية (معادلة الميزانية) .

٢. إعداد قائمة الدخل عن شهر يناير ٢٠١٤.

٣. إعداد قائمة التغير في حقوق الملكية فى ٣١ يناير ٢٠١٤.

٤. قائمة المركز المالي في ٣١ يناير ٢٠١٤.

مع تمنياتي بالتوفيق و النجاح

أ.د. سمير أبو الفتوح صالح

Mansoura University
Faculty of Science
Physics Department
General Physics

Second Term Exam 2014-2015
Physics (102)

Time Allowed: 2 h
Date: 23/ 5 / 2015
All Programs

Total Mark = 60 Mark

## Answer the following Questions:

**Q.1a) Choose and write the correct answer:** (15Marks)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |

1) A charge moving in a magnetic field feels a force ……..
a- Perpendicular to both the magnetic field and to the direction of motion of the charge.
b. Perpendicular to the magnetic field and parallel to the direction of motion of the charge.
c. Parallel to both the magnetic field and to the direction of motion of the charge.
d. All are correct.

2) The index of refraction of a substance is the……..
a. Ratio of the speed in light in a vacuum to the speed of light in that substance. –b. Ratio of the speed in light in a substance to the speed of light in that vacuum. –c. Ratio of the speed in light in a substance to the same speed of light in that vacuum - d. None of these is correct

3) Two small conducting spheres attract one another electrostatically. This can occur for a variety of reasons. Which of the following statements MUST be true?
a. At least one sphere is charged. - b. Neither sphere is charged. –c. Both are charged. – d. Both have the same sign of charge. – e. None of these is correct

4) A surface is constructed so that at all points on the surface the electric field, E , points inward. It can be concluded that……..
a. The surface encloses a net positive charge. – b. The surface encloses a net negative charge. – c. The surface encloses no net charge. – d. None of these is correct

5) Consider two isolated spherical conductors each having net charge Q. The spheres have radii a and b, where b > a. Which sphere has the higher potential? (Take the zero of potential to be at ∞.) ……
a. The sphere of radius a. – b. The sphere of radius b. - c. They have the same potential. – d. More information is needed to answer the question.

6) A positive charged particle traveling with a velocity v in an electric field E~ experiences a force F~ that must be……..
a. Parallel to v. – b. Parallel to E. - c. Perpendicular to v. – d. Parallel to v × E . f. Perpendicular to E .

7) If the net flux through a gaussian surface is *zero*, the following four statements *could not be true*. Which of the statements *must be true*……..?
a. There are no charges inside the surface. – b. The net charge inside the surface is zero. – c. The electric field is zero everywhere on the surface. – d. The number of electric field lines entering the surface equals the number leaving the surface.

8) Electric current may be expressed in which one of the following units?
a. Coulombs/volt . – b. joules/coulomb - c. Coulombs/second - d. Ohms/sec.

9) The force acting between two point charges can be computed using which of the following laws?
a. Ohm's Law - b. Ampere's Law - c. Coulomb's Law – d. Newton's Second Law

10) For an infinite sheet of positive charge, the electric field lines:
a. Run parallel to the sheet of charge. – b. Are perpendicular to the sheet of charge and point in toward the sheet. - c. Are perpendicular to the sheet of charge and point away from the sheet. - d. Fall off as one over r squared.

11) Three capacitors with different capacitances are connected in series. Which of the following statements is TRUE?

a. All three of the capacitors have the same potential difference between their plates. – b. The magnitude of the charge is the same on all of the capacitor plates. – c. The capacitance of the system depends on the voltage applied across the three capacitors.

12) For a parallel-plate capacitor with plate area "A" and plate separation "d", the capacitance is proportional to which of the following?

a. A divided by d squared – b. A times d – c. A divided by d – d. d divided by A.

13) The wave nature of light is demonstrated by which of the following?

a. The photoelectric effect – b. Color – c. The speed of light – d. Diffraction.

14) The force on a charged particle moving parallel to magnetic field lines is:

a. In the direction of the field – b. Zero – c. Perpendicular to the field – d. In the opposite direction of the field.

15) A dielectric material such as paper is placed between the plates of a capacitor. What happens to the capacitance?

a. no change - b. becomes larger - c. becomes smaller - d. becomes infinite

---

Q.2a) As light travels from one medium to another with different refractive index, its frequency does not change but its wavelength does, prove that, $n_1\lambda_1 = n_1\lambda_1$ (5 Marks)

Q.2b) What is the difference between the Magnetic and Electric Forces. (5 Marks)

Q.2c) Determine the electric field due to a point charge q by using Gauss's law (5 Marks)

---

Q3.a) A cubical surface with sides 2.0 m long is oriented with its right and left faces perpendicular to a uniform electric field $E\sim = 1.6 \times 10^5$ N/C. Calculate the net charge enclosed by this surface is approximately. (5Marks)

Q3.b) A singly charged positive ion has a mass of $2.5 \times 10^{-26}$ kg. After being accelerated through a potential difference of 250 V, the ion enters a magnetic field of 0.5 T, with velocity v = 56,568 m/s, in a direction perpendicular to the field. Calculate the radius of the path of the ion in the field. (5 Marks)

Q3.c) A two farad and a four farad capacitor are connected in series. What single capacitance is "equivalent" to this combination? (4 Marks)

---

Q4) Write the meaning of each expression. (8 Marks)

i. electric force on the test charge per unit charge.
ii. A pair of equal and opposite charges q separated by a small distance is known as .....
iii. The net electric flux $\Delta\Phi_E$ through any closed surface is equal to the *net* charge $q_{in}$ inside the surface divided by $\epsilon_o$.
iv. The potential energy per unit charge at a point in an electric field.
v. Adjacent points that have the same electric potential.
vi. Is a measure of how much charge must be put on the plates to produce a certain potential difference between them.
vii. Is a vector quantity that is directed along the zero-force axis.
viii. Is the rate at which charge flows through this surface

---

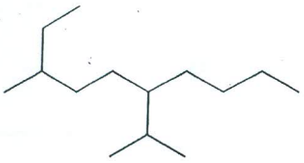
*Examiners: Prof. N. Bakr, Prof. K. Elegaly, Prof. M. T. Ahmed, Dr. N. Kenawy, Dr / M. Abdelhamed, Dr.R. Moustafa, Dr. A. SAran*

| | |
|---|---|
| Mansoura University | Second Term |
| Faculty of Science | Time Allowed: 2 Hours |
| Chemistry Department | Date: May. 2015 ( 26 – 5- 2015) |
| Subject: Chemistry | Full Marks : 60 |
| Course(s): Chem.131 Principles of Organic Chemistry 1 for 1st Level Chemistry and Biochemistry students | |

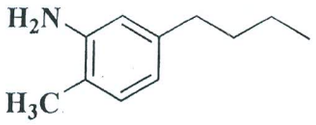
**Answer All Questions**

**Q1 : A** – Give the IUPAC name for each compound **(10 Marks)**

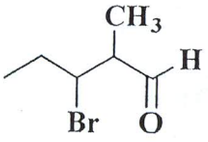
i -



ii -

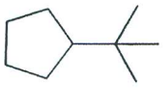



iii -




iv -

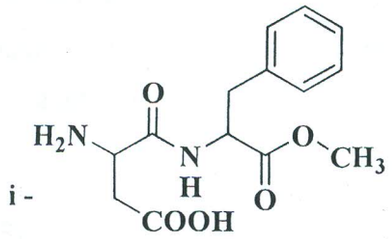
v -



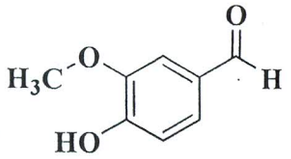
---

**B** - Identify the functional groups in the following molecules **(4 Marks)**

i -



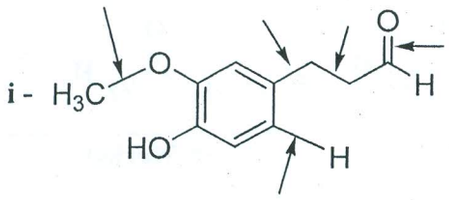

ii -



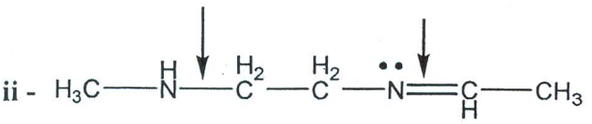

---

**C** - In each of the following organic compounds. What orbitals are used to form each indicated bond **(6Marks)**

i -

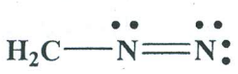



ii -

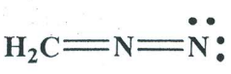



---

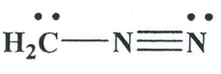
**Q2 : A** - Consider Lewis formulas **A, B,** and **C**: **(6 Marks)**




**A**




**B**




**C**

**(i)** Calculate Formal Charge for carbon and nitrogen atoms in each structure **A, B,** and **C**

**(ii)** Explain why **A, B,** and **C** are resonance structures?

**(iii)** Which is a more stable structure, **A** or **B** & **B** or **C** ? Why?

---

**B** - Draw chemical structure of the following organic compounds **(5 Marks)**

**i** - 2-phenylbut-2-en-1-ol **ii** -1-chloro-4-propyl-2-vinylbenzene

**iii** -4-Methylpent-4-en-2-one **iv** -3-methylhex-4-en-1-yne

**v** -2,6-Dichloro-4-methylcyclohexanol

---

**Please Turn to Next Page**

**C** – For each of the following molecular formula. **(4 Marks)**

**i -** $C_2H_3N$ where H are bonded to C atom **ii –** $HNO_2$

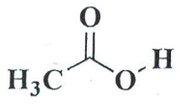
*Draw Lewis structure

* count number of bonding and non bonding electrons

* Count number of σ and π - bonds

**D** - Rank the following compounds in order of increasing acidity. Explain your answer **(5 Marks)**

$H_3C-O-H$ & $H_3C-NH_2$ &



**Q3: A** - Complete the following sentences **(5 Marks)**

i- The IUPAC name of *neo*-pentane is ---------- in which number of $1^0$ H atom equal ----------

ii – The structural formula of *t*-butyl chloride is ----------while that of *iso*-propyl chloride is ---------

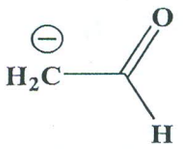
iii- Catalytic reduction of 2-butene give ----------while that of ---------- give 2-methylpropane

iv – The common name of $C_5$-carboxylic acid is --------- while its IUPAC name is ----------

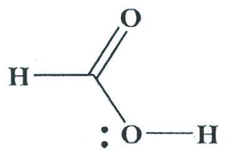
v - The structural formula of *neo*-pentyl alcohol is ----------while that of *ter*-pentyl alcohol is ---------

**B** - Draw all reasonable resonance structures for each species use **curved arrows**. compare the stabilities of these resonance structures indicating major and minor one. **(6 Marks)**

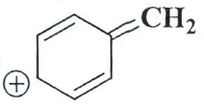
i -



ii -



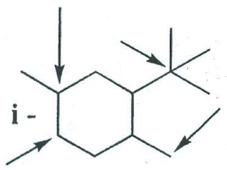
iii -



**C** - List the following carboxylic acids in order of decreasing acidity. Explain your answer **(5 Marks)**

**D** - Classify the designated carbon atoms as 1°, 2°, 3°, or 4° **(4 Marks)**

i -



ii - $CH_3 - CH_2 - CH(CH_3) - C(CH_3)_3$

**Good Luck**

**Examiners** **Prof. Dr. E. B. Moawad**

**Dr. Ebrahim Abdel-Galil**

| | | |
|---|---|---|
| الفرقة: الثانيـــــــــــــة<br>الشعب: كيمياء- كيمياء حيوية -كيمياء/ نبات -<br>كيمياء/حيوان-علوم بيئة-جيولوجيا<br>المادة: ر201- رياضيات بحتة | كلية العلوم – قسم الرياضيات | دور مايو2015<br>الزمن: ساعتـــان<br>التاريخ:2015/6/3 |

*أجب على الأسئلة الآتية:*

[1] أ. اوجد الحل العام للمعادلة التفاضلية : $y' = \frac{x-2y+3}{2x-4y+5}$ [ 10 درجات]

ب. حل مسألة الشرط الإبتدائي : $y'\cos x - y\sin x = \frac{\sin^3 x}{\cos x}$ , $y(0)=5$ [ 10 درجات]

---

[2]أ. إذا كانت $z = \tan^{-1}\left(\frac{x^5-y^5}{2x+y}\right)$ ، فاثبت أن : $x\frac{\partial z}{\partial x}+y\frac{\partial z}{\partial y}=2\sin 2z$ . [ 10 درجات]

ب. إذا كانت $S = f(y-z, z-x, x-y)$ ، فاثبت أن : $\frac{\partial S}{\partial x}+\frac{\partial S}{\partial y}+\frac{\partial S}{\partial z}=0$ . [ 10 درجات]

---

[3]أ. في إحدى التجارب كان عدد البكتريا في حوض الاختبار عند لحظة معينة هو 500 ، وبعد ساعتين أصبح العدد 2500 ، فإذا كان معدل تزايد عدد البكتريا عند أي لحظة يتناسب مع العدد نفسه ، اوجد :

(ii) عدد البكتريا في حوض الاختبار عند أي لحظة ; [ 4 درجات ]

(ii) عدد البكتريا بعد 6 ساعات ; [ 4 درجات ]

(iii) الزمن اللازم ليتضاعف عدد البكتريا الأصلي . [ 4 درجات ]

[ ملحوظة : اعتبر أن $\ln 2 \approx 0.7$ ، $\ln 5 \approx 1.6$ ، $e^{4.8} \approx 121$ ]

ب. احسب مساحة المنطقة الواقعة في الربع الأول للمستوى والمحصورة بين القطع $y = x^2$ والخطوط $x+y=6$ ، $x=0$ . [ 8 درجات ]

---

[4] أ. اثبت أن التكامل الخطي: $\int_{(0,2)}^{(1,5)} (x^2+y)dx+(x+2y-1)dy$ هو تكامل محافظ ، ثم احسب قيمته.

[10 درجات]

ب. باستخدام نظرية "جرين" ، حول التكامل الخطي $\int_c (x^2-2y^3)dx+(2x^3+5y)dy$ إلى تكامل ثنائي ، ثم احسب قيمة التكامل الثنائي الناتج . [ 10 درجات]

مع التمنيات بالتوفيق

| | | |
|---|---|---|
| Mansoura University<br>Faculty of Science<br>Chemistry Department<br>Subject: General & Inorg. Chemistry<br>Code No. : Chem (121) | كلية العلوم<br>جامعة المنصورة | Second Term<br>First Level : ( Biochem. & Chem. )<br>Program Students<br>Date : 6 June, 2015<br>Time Allowed: 2 hours<br>Full Mark : 60 Marks |

## Answer the Following Questions

**[Q1] .Complete the following *statements (10 Only):*** *(20 marks)*

1. A ray of white light is spread out into ..... , while the line spectrum consists of a .....
2. Principal quantum number (n) measures the ....., ....., whereas (*l*) gives the ....., ..... and the magnetic quantum number (m) designates the .....
3. The maximum number of electrons in a shell is ..... whereas the maximum number of orbitals in a subshell is .....
4. The four quantum numbers of the last electron in ( $5d^7$ ) are ....., ....., ....., .....
5. A period is defined as ....., whereas the family is defined as.....
6. The electronic configuration of an element with (Z = 33) is ..... , it is roomed in ..... group and ..... period.
7. The Pauli Exclusion Principle states that..... Consider ($_2$He – atom).
8. All inner transition elements are ..... and ....., their compounds are ..... and .....
9. The electron affinity (E.A) is ..... , while the lattice energy (Lat.E) is .....
10. From Born – Haber cycle for NaCl(s) : ( $\Delta H_f$ = ..... + ..... + ..... + ..... + .....).
11. In the regular octahedron $SF_6$ molecule all the ....., ....., .....

**[Q2]. Put the Mark (√) or (X) on the following statements, then give reason for your answer ( 7 Only ):**

1. $BF_3$ is a linear molecule, whereas $BeCl_2$ is an angular planar. ($_5$B, $_4$Be,$_9$F $_{17}$Cl) ( 14 marks )
2. In the periodic table, the F element is the most electronegative and Cs is the least. Explain. ($_9$F, $_{55}$Cs)
3. The size of Na atom is smaller than $Na^+$ ion. ($_{11}$Na)
4. The polarity of the covalent bond increases as follows : C-O> C-N > C-F. ($_6$C, $_7$N, $_8$O, $_9$F)
5. The first ionization energy of P atom is less than that of S atom. ($_{15}$P, $_{16}$S )
6. The isoelectronic species have the same number of protons. Consider $CaCl_2$ compound.
7. The Cl atom does not form a $Cl^{2-}$ ion instead of the $Cl^-$ ion. ($_{17}$Cl)
8. $He_2$ does not exist, whereas the helium molecule ion ($He_2^+$) exists under proper conditions. ($_2$He)

**[Q3]. Choose and give the reason for your choice for (7 Only) of the following questions:** *(14 marks)*

1. The element with electronic configuration [ Ne] $3s^2\ 3p^3$ is.....

   a) In the third period b) In the fifth A group

   c) A p-block element d) Phosphorus e) All the above are correct.

2. Which of the following has the largest atomic radius?

   a) Cl b) F c) Br d) I

3. How many equivalent resonance forms can be drawn for $CO_3^{2-}$ ion ? ($_6C$ , $_8O$)

a) 1 b) 2 c) 3 d) There are no resonance structures for this ion.

4. Which one of the following is the correct orbital diagram for ground state nitrogen ($_7N$)?

a) 

b) 

c) 

d) 


5. Which of the following Lewis $N_2O$ structures is false?

a)  b)  c) 

6. The limiting reagent in a chemical reaction is one that:

a) has the largest molar mass (formula weight). b) has the smallest molar mass (formula weight).

c) has the smallest coefficient. d) is consumed completely.

7. The electron configuration of copper atom ($_{29}Cu$) is given by :

a) [Ar] $4s^1\ 3d^{10}$ b) [Ar] $4s^2\ 3d^9$ c) [Ar] $4s^1\ 3d^9\ 4p^1$ d) [Ar] $4s^2\ 3d^{10}\ 4p^1$

8. Which of the following elements has a positive electron affinity value ?

a) $_{10}Ne$ b) $_9F$ c) $_8O$ d) $_6C$

[Q4]. A. Diagram the Lewis structure, calculate the formal charge and deduce the resonance forms of nitric acid ($HONO_2$). ($_1H$, $_7N$, $_8O$) ( 4 marks )

B. The composition of adipic acid is (49.3%C , 6.9%H and 43.8%O by mass), and its molecular weight is ( 146 amu ). What are the empirical and molecular formulae ?

(Atomic wts. : H =1 , C =12 , O = 16 ) (4 marks )

C. Calculate the wave length ($\lambda$, nm) and frequency ($\nu$, $s^{-1}$) of the line in the hydrogen spectrum corresponding to electron transition from (n = 6 to n = 3). Does this line occur in the infrared region?

(Rydberg's constant = 109678 $cm^{-1}$, speed of light (c) = $3 \times 10^8$ m/s, Planck's constant (h) = $6.63 \times 10^{-34}$ J.s, A = $2.18 \times 10^{-18}$ J). (4 marks )

---

Best Wishes

Prof. Dr. T. RAKHA

Mansoura University
Faculty of Science
Botany Department

جامعة المنصورة
كلية العلوم
قسم النبات

**Final Examination in Botany**
**Second Term: May 2015**

**Educational Year: 1st Level** **Program : Biology**
**Courses: Basics of Plant Physiology**
**Subject: ( B 102 )** **Time :2 hrs** **Date: 2/6/2015** **Full mark: 60**

**Answer the following questions:**

ملحوظه: مراعاة تسلسل الاجابة كما هو فى الاسئلة.

## Q1:Answer all the following questions: (15 marks)

**A- Multiple Choice Question: (circle all answers that apply) (7.5 marks)**

1- A cell whose internal osmotic concentration is 0.3 osmoles/liter is placed in a solution that is 0.5 osmoles/liter. The solution is:
a- Isotonic to the cell b- Hypertonic to the cell c- Hypotonic to the cell
2- A cell is placed in a solution and swells. The solution is:
a- Isotonic to the cell b- Hypertonic to the cell c- Hypotonic to the cell
3- Colloids are intermediates state between.....
a- True solutions and suspensions b- True solutions and emulsions
c- Suspensions and emulsion
4- Classification of colloids depends mainly on .....
a- Affinity between solute and solvent
b- Affinity between dispersed medium and dispersed phase c- Both
5- Dialysis is separation of ..... .....from crystalloids
a- Colloids b- Suspensoids c- Emulsoids

**B- Complete the missing words in the following: (7.5 marks)**

1- Osmosis is .....
2- Colloids classified into ..... and .....
3- Cytoplasm of plant cell is a complex .....
4- Osmotic suction force of a plant cell in a hypotonic solution = .....
5- Semipermeable membrane allows ..... to pass through it

## Q2- Answer the following: (15 marks)

**A- Complete: (7 marks)**

1- Water absorption takes place by:
a- ..... , b- ..... , c- .....
2- The following are the main factors affecting water absorption ..... ,
..... , ..... , ..... , ..... , .....
3- The transpiration rate can be measured by
a-..... , b- ..... c-.....
4- The root pressure is a force originates in ..... and it is responsible for .....

**B- Correct the wrong answers: (2.5 marks)**

1- $K^+$ efflux from epidermal cells to guard cells causes closure of stomata at night.

من فضلك اقلب الورقه.....

2- Water stress causes ABA synthesis in leaves which stimulates the proton pump and stomatal opening.
3- Cuticular transpiration is low in young leaves because the thickness of cuticle is very high.
4- Guttation occurs during the day hours.
5- The casparian strip occurs in the cortex of stem.

**C- (5.5 marks)**
i- Mention the different characters of desert plants to adapt unfavourable conditions in the desert. (3.5 marks)
ii- Illustrate with drawings the structure of the stomatal apparatus. (2 marks)

## Q3- Answer the following: (15 marks)

**A- In a table compare between the following: (7 marks)**
1- Ion synergism and ion antagonism (with examples).
2- Electrolytes and non-electrolytes.
3- Effect of temperature on permeability of electrolytes and non-electrolytes.
4- Endocytosis and Exocytosis processes through plasma membrane.
5- Permeability of plasma membrane to electrolytes and non-electrolytes.

**B- Explain in details each of the following: (8 marks)**
1- Role of Ruben and co-workers in the first stage of photosynthesis mechanism (with equations).
2- The enzymatic conversion of carbon dioxide into glyceraldehyde-3-phosphate.
3- Effect of plant water content on the photosynthesis rate and the respiration rate.
4- Different types of respiration in higher plants (with equations).

## Q4- Answer the following: (15 marks)

**A- Explain the action of the following enzymes groups referring to definition, one example & the equation of this example: (6 marks)**
1- Oxidases. 2- Isomerases.
3- Hydrolases. 4- dehydrogenases.

**B-Write in details an account on: (4 marks)**
1- Effect of accumulation of end products on enzyme action.
2- Presence of activators in the enzymatic reaction medium (with examples).

**C- Complete the following: (5 marks)**
1- Enzymes act as catalysts characterized by ..... and .....
2- The activation energy of the reaction may be defined as ....., while turnover number is defined as.....
3- There are two types of enzymes according to the nature are..... and .....
4- Photosynthesis can be determined by ..... and .....
5- Roles of respiration are ..... and .....

**Examiners:**

**Prof. Samy A. Abo-Hamed** **Prof. Heshmat S. Aldesuquy**
**Prof. Rasha M. Eid Gamel** **Dr. Shaimaa M. N. Tourky**