

Republic of Iraq
Ministry of Higher Education &
Scientific Research
Tikrit University
College of Sciences
Chemistry Department



جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة تكريت
كلية العلوم
قسم الكيمياء

الامتحان التنافسي للمتقدمين للدراسات العليا الماجستير ٢٠١٦ - ٢٠١٧

يتضمن المواد التالية :

- (١ - الكيمياء الفيزيائية . ٢ - الكيمياء الحياتية . ٣ - الكيمياء اللاعضوية . ٤ -
الكيمياء التحليلية . ٥ - الكيمياء العضوية . ٦ - الكيمياء الصناعية .)

- توزع الدرجة بالتساوي لكل تخصص ومن ثم تستخرج الدرجة الكلية ، بجمع الدرجات
لكافة التخصصات وتقسم على ٦ لكي يحصل الطالب على الدرجة التي تؤهله للتنافس
في حال النجاح .

- يرجى الانتباه ان للتخصصات (العضوية والصناعية الاسئلة متكونه من صفحتان لذا
يرجى الانتباه الى ظهر الصفحة) .

مع تمنياتنا للجميع بالموفقية



د. عبد الله سليم خزعزل
رئيس قسم الكيمياء



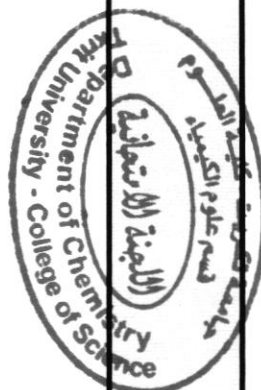
Competition Exam Of the Candidates to MS.c Study / 2016 – 2017

No.	Note: Answer All Questions	Degree
	<p>Q₁ : Choose the right answer for the following :</p> <p>1- The function become an Eigen function when the operator work on it : a) give the same function multiply by constant . b) gives different function . c) gives the same function multiply by another function . d) gives constant with different function .</p> <p>2- Minimization of the molecular system lead to : a) lowest energy of the system . b) Highest energy of the system . c) Zero energy of the system . d) Moderate energy of the system .</p> <p>3- The wave lengths of UV radiation is ----- the wave lengths of Visible radiation: a) Same . b) Lower than . c) Bigger than . d) Sometime bigger and sometime lower .</p> <p>4- When the atoms of diatomic molecule close to each other the energy go to : a) Low value . b) Zero . c) High value . d) The same value .</p> <p>5- The electrical conductivity in metals conduct by ----- . a) Ions . b) electrons . c) excited atoms . d) excited molecules .</p> <p>6- The unit of Specific conductivity is ----- . a) Ohm^{-1} . b) Siemens . c) $\text{Ohm}^{-1} \cdot \text{cm}$. d) $\text{Ohm}^{-1} \cdot \text{cm}^2 \cdot \text{mol}^{-1}$</p> <p>7- At the equilibrium ----- equal to zero . a) ΔE . b) ΔH . c) ΔG . d) ΔE^0 .</p> <p>8- We can use ----- and ----- to know the spontaneity of a reaction . a) ΔS . b) ΔH . c) ΔK . d) ΔE . e) ΔG .</p> <p>9- 500 Kelvin equal ----- . a) 227°C . b) 223°C . c) -227°C . d) -223°C .</p> <p>Q₂ : Define the following briefly : 1-Electrode . 2-Quantum Mechanics . 3-Adiabatic process . 4- Boyles Law .</p> <p>Q₃ : a) Calculate the work of one mole of gas expand isothermal and reversely to its double volume at 300 K . b) Calculate E_{zn} at 298 K for $\text{Zn} \text{Zn}^{+2}(\text{aq}, a=0.1)$ if $E^0_{\text{zn}} = 0.7628$ volt .</p> <p>$R = 8.314 \text{ J.K}^{-1} \cdot \text{mol}^{-1}$, Faraday = 96500 Coulomb</p> <p style="text-align: center;"><i>Good Luck</i></p>	60
		20
		20
<p>Signature: _____ Examination Committee Seal _____ Signature: _____</p> <p>Examiner: _____ Date: / / 2016 _____ Head of Department: _____</p> <p>Dr. Abdullah saleem khazaal Dr. Abdullah saleem khazaal</p>		



Competition Exam Of the Candidates to MS.c Study / 2016 – 2017

No.	Note: Answer All Questions	Degree
Q1	<p>Select the single best answer for each of the following questions:</p> <p>1- Proteins contain (A) Only L- α - amino acids (B) Only D-amino acids (C) DL-Amino acids (D) Both (A) and (B)</p> <p>2-The optically inactive amino acid is (A) Glycine (B) Serine (C) Threonine (D) Valine</p> <p>3- amino acids at physiological pH is (A) All amino acids contain both positive and negative charges (B) All amino acids contain positively charged side chains (C) Some amino acids contain only positive charge (D) All amino acids contain negatively charged side chains</p> <p>4. Electrostatic bonds can be formed between the side chains of (A) Alanine and leucine (B) Leucine and valine (C) Aspartate and glutamate (D) Lysine and aspartate</p> <p>5. Sanger's reagent contains (A) Phenylisothiocyanate (B) Dansyl chloride (C) 1-Fluoro-2, 4-dinitrobenzene (D) Ninhydrin</p> <p>6. Primary structure of a protein is formed by (A) Hydrogen bonds (B) Peptide bonds (C) Disulphide bonds (D) All of these</p> <p>7. Isoenzymes are (A) Chemically, immunologically and electrophoretically different forms of an enzyme (B) Different forms of an enzyme similar in all properties (C) Catalysing different reactions (D) Having the same quaternary structures like the enzymes</p> <p>8. Factors affecting enzyme activity: (A) Concentration (B) pH (C) Temperature (D) All of these</p> <p>9. In Lineweaver-Burk plot, the y-intercept represents (A) V_{max} (B) K_m (C) K_m (D) $1/K_m$</p> <p>10. In competitive inhibition, the inhibitor (A) Competes with the enzyme (B) Irreversibly binds with the enzyme (C) Binds with the substrate (D) Competes with the substrate</p>	60
Q2	<p>what are the differences between :</p> <p>1: Hetropoly and homopoly saccharides with examples .</p> <p>2: Competitive , Non-Competitive and In-Competitive inhibition .</p> <p>3: DNA and RNA .</p> <p>4: Saponifiable and non-Saponifiable Lipids.</p>	40
<p>Signature: Examination Committee Seal Signature: Examiner: Date: 18 / 7 / 2016 Head of Department: Dr. Nazar Ahemd Naji Dr. Abdullah saleem khazaal</p>		







Competition Exam Of the Candidates to MS.c Study / 2016– 2017

No.	Note: Answer All Questions	Degree
Q1	<p>Choose the right answer for seven of the followings :</p> <ol style="list-style-type: none"> 1. $[\text{Ni}(\text{CO})_4]$ is ; (a). tetrahedral (b) square planar. 2. $[\text{Co}(\text{NH}_3)_6]^{2+}$ is; (a) high spin (b) low spin. 3. $[\text{CoCl}_3(\text{NH}_3)_3]$ has; (a) one geometrical; (b) two (c) three. 4. cis-$[\text{CoCl}_2(\text{en})_2]$ has an optical activity; (a) yes (b) No. 5. Co(II) low spin complexes suffer Jahn Teller distortion; (a) yes (b) no 6. Trans influence is (a) Kinetic factor (b) Thermodynamic Factor. 7. The number of d-orbitals are (a) six, (b) four (c) three 8. Br_2 is (a) oxidizing agent, (b) reducing agent . 	60
Q2	Draw crystal field splitting diagram of the octahedral complexes then calculate crystal field stabilization energy for high spin d^0 to d^5 complexes.	20
Q3	Discusses bonding between Metal ion and carbon monoxide ligand ?	20



Signature:

Examiner:

Dr. Subhi Atieaa Mahmood

Examination Committee Seal

Date: 18 /7 / 2016

Signature:

Head of Department:

Dr. Abdullah saleem khazaal



Competition Exam Of the Candidates to MS.c Study / 2016 – 2017

No.	Note: Answer All Questions	Degree
Q1	<p>Select the best answer of the following?</p> <p>1.The morality is prepared by dissolving (1M.Wt,1Equivalent weight,1 formula weight) in one (liter ,mil, decimeter).</p> <p>2.The spectrum is relation between (absorbance and concentration, transmittance and concentration, both) .</p> <p>3.Chromatogram is relation between (peak height and concentration, peak area and concentration, both)</p> <p>4.Voltagram is relation between(current and concentration, diffusion current and concentration, both) .</p> <p>5.Differential pulse anoding stripping voltammetry is more sensitive than(pulse polography, polography, both) .</p> <p>6.The weight of 1mole of H_2O is (18, 1.8, 0.18gm) .</p> <p>7.The pH of 0.1M HCl is (1, 0.1 ,0.01) .</p> <p>8.The molarity of 36% HCl with specific gravity 1.18 is (11.8,1.18, 0.118) .</p> <p>9.Gravimetric method depend upon the measurement of (weight, volume, both) .</p> <p>10.1ppm equivalent to(1μg/ml, ng/ml, both)</p>	60
Q2	<p>Calculate the concentration of analyst (M.wt=151 g/mole) in ppm, if the absorbance = 0.750 , cell path =1.0 cm wave length = 500 nm and molar absorptivity = 5342 mole/Liter?</p>	40

Signature:

Examiner:

Dr. Husain Hasan Kharnoob

Examination Committee Seal

Date: 18 / 7 / 2016

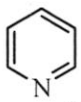
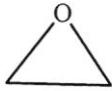
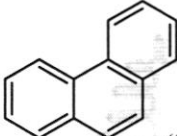


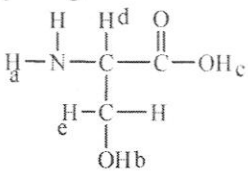
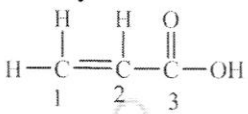
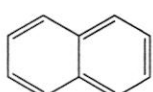
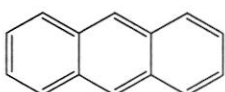

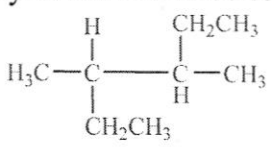
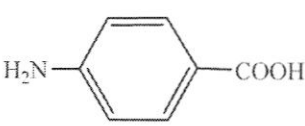
Signature:

Head of Department:

Dr. Abdullah saleem khazaal



Competition Exam Of the Candidates to MS.c Study / 2016 – 2017

No.	Note: Answer All Questions	Degree
Q1/a	<p>Define of the following terms giving one example: -</p> <p>1-) SN^1 reactions. 2) Elimination reaction 3) Williamson synthesis for ethers 4) cannizzaro reaction 5) Claisen condensation</p> <p>b Classify each of each of the following heterocyclic molecules as aromatic or not aromatic, according to Huckel's rule.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  (1) </div> <div style="text-align: center;">  (2) </div> <div style="text-align: center;">  (3) </div> <div style="text-align: center;">  (4) </div> <div style="text-align: center;">  (5) </div> </div> <p>c What are the expected chemical shift ranges for vinyl and aryl protons?</p>	34
Q2	<p>Choose the correct words in these sentences.</p> <p>1-Which hydrogen is the most acidic in the molecule shown?</p> <div style="text-align: center;">  </div> <p>2-How many different compounds have the formula C_3H_8O?</p> <p>3 -What is the hybridization of carbon atoms 1, 2 and 3 respectively in the structure?</p> <div style="text-align: center;">  </div> <p>4-Which formula can be used to represent alcohols?</p> <p>a- $C_nH_{2n+1}O$ c- $C_nH_{2n+2}O$ b- C_nH_{2n+2} d- $C_nH_{2n}O$</p> <p>5-How many atoms of oxygen are in a glucose molecule?</p> <p>a= 2 b=6 c=10 d= 12</p> <p>6-Which structure an organic compound can be used to represent an anthracene?</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p>7-Give a systematic names for each the following compounds?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1)</p>  </div> <div style="text-align: center;"> <p>2)</p>  </div> </div>	36

8-When two of an organic compound is burnt in oxygen, eight mole of carbon dioxide gas is formed. In a second test ,when a few drops of bromine are added to the compound and shaken , the bromine rapidly decolorizes . The formula of the compound could be;-

- a- C_4H_8 b- C_4H_{10} c- C_8H_{16} d- C_8H_{18}

9-An organic compound reacts with both dilute hydrochloric acid and dilute sodium hydroxide solution. The compound could be;-

- a) C_3H_7Cl b) $C_3H_7NH_2$
c) C_4H_9COOH d) H_2NCH_2COOH

10-which would you except to be the stronger acid :

- a- β -Chloro ethyl alcohol or ethyl alcohol.
b- Benzyl alcohol or p- Nitro benzyl alcohol.

11- Which term describes the formation of acetic acid from ethyl alcohol?

- a- Addition b- Esterification c-Neutralization d-Oxidation .

12-The carboxylic acid can be prepared from p-bromo toluene by direct oxidation is--
----- .

Q3

Complete the sentences.

1--When an alcohols is treated with carbon disulfide and aqueous sodium hydroxide to obtain a compound called a -- -----.

2-Treatment with methyl chloride and $AlCl_3$ at $0^\circ C$.converts toluene chiefly into -----
-----.

3-When acid chloride is treated with ammonia to obtain a compound called a -----
--.

4-When carboxylic acid is treated alcohol to obtain a compound called a -----

5-Electrophilic Aromatic Substitution includes; 1----- -2- ----- -3-----and
----- -4- ----- and-5- ----- .

6-When a solution of a alkylhalide in dry ether $(C_2H_5)_2O$ is allowed to react with metallic magnesium ,the resulting a solution is called -----

7--In the α,β -unsaturated carbonyl compounds ,the carbon- carbon double bond and the carbon- oxygen double bond are separated by just-carbon- carbon -----bond.

8-Reaction of acid chloride with sodium azide (NaN_3) , yield -----.

9-Quinoline contains a benzene ring and a-----ring fused.

10-The three-membered ring compounds containing a sulfur and a nitrogen atom in the ring are called the ----- and-----

11- The six-membered ring compounds containing a nitrogen atom in the ring are called the -----

12-Phenols are more acidic than alcohols ,but----- acid than carboxylic acid.

13-The structures of alkene expected from dehydrohalogenation of 1-chloropentane is---.

14-Naphthalene has molecular formula ----- While anthracene and phenanthrene have molecular formula -----.

15-Bromination of anthracene or phenanthrene a takeplace at -----position . .



30

Signature:

Examiner:

Dr. Ahmood Khalaf Jebur

Examination Committee Seal

Date: 18 / 7 / 2016

Signature:

Head of Department:

Dr. Abdullah saleem khazaal



Competition Exam Of the Candidate to MS.c Study / 2016 – 2017

No.	Note: Answer All Questions	Degree
	<p>Q1: Give the right answer of the following:</p> <p>1- Ethylene gas can be produced by thermal cracking of : A- natural gas B- light petroleum derivatives C- kerosene</p> <p>2- Ammonia production increase by : A- increasing heat B- reducing pressure C- not A and B</p> <p>3- cement composed of : A- organic and inorganic materials B- inorganic salts C- other materials</p> <p>4- Ethanol can be produced from reaction of hydrogen : A- carbon monoxide B- ethylene C- not A and B</p> <p>5- absolute alcohol produced from reaction: A- of ethylene with acids B- carbon dioxide C- not A and B</p> <p>6- The shampoo is : A- soap B- non ionic surfactant C- mixture of both A and B.</p> <p>7- Alkyl benzene can be used in manufacturing of : A- soap B- detergent C- shampoo</p> <p>8- carboxymethyl cellulose increase the : A- suds B- the brightness of the clothes C- not A and B</p> <p>9- the components of cement are: A- calcium silicate B- aluminum silicate C- others</p> <p>10- Biuret in urea A- reduce quality B- production C- not A and B</p> <p>11- The chemical concept of soap is: A- fatty acid B- triglycerides c- not A and B</p> <p>12- the petro chemical industry are complex technology due to: A- needs number of workers B- required raw materials C- the pollution.</p> <p>13- crude oil treatment required : A- simple heating evaporation B- evaporation under pressure .C- not A and B.</p>	30

14- adsorption is:

A- reaction of two substances B- dissolving of one substance with the other C- interaction of two substances.

15- the molecular weight of the polymer means:

A- number of monomers B- number of polymer molecules C- degree of polymerization Dp

Q2-: complete the following expression:

- 1- Nitrogen percent in urea should be -----
- 2- the AIP of the crude oil are -----
- 3- the modern method for ethanol production from -----
- 4- ethylene glycols are produced from reaction of -----
- 5- the chemical concept of absolute ethanol is -----
- 6- increase the pressure in ammonia production lead to -----
- 7- steam is added in the thermal cracking of hydrocarbons to -----
- 8- soap can be produced by both -----
- 9- the polymer can be classified into -----
- 10- increasing the temperature in urea production lead to-----
- 11- the reason for rancidity is the presence of -----
- 12- addition polymerization include -----
- 13- absorption processes are -----
- 14- in condensation polymerization monomer should have -----
- 15- the fraction of crude oil distillation is -----

Q3-:

A- Define the following expression:

- 1- the Ziegler-Natta catalysts
- 2- the weight average molecular weight
- 3- the flash point
- 4- addition polymerizations.
- 5- the doctor point

B- Give the first steps (briefly explain) of the crude oil treatment

Good Luck

Signature:

Examiner:

Dr. Emaad Taha Bakir



Examination Committee Seal

Date: 18 / 7 / 2016

Signature:

Head of Department:

Dr. Abdullah saleem khazaal

14- adsorption is:

A- reaction of two substances B- dissolving of one substance with the other C- interaction of two substances.

15- the molecular weight of the polymer means:

A- number of monomers B- number of polymer molecules C- degree of polymerization Dp

Q2-: complete the following expression:

- 1- Nitrogen percent in urea should be -----
- 2- the AIP of the crude oil are -----
- 3- the modern method for ethanol production from -----
- 4- ethylene glycols are produced from reaction of -----
- 5- the chemical concept of absolute ethanol is -----
- 6- increase the pressure in ammonia production lead to -----
- 7- steam is added in the thermal cracking of hydrocarbons to -----
- 8- soap can be produced by both -----
- 9- the polymer can be classified into -----
- 10- increasing the temperature in urea production lead to-----
- 11- the reason for rancidity is the presence of -----
- 12- addition polymerization include -----
- 13- absorption processes are -----
- 14- in condensation polymerization monomer should have -----
- 15- the fraction of crude oil distillation is -----

Q3-:

A- Define the following expression:

- 1- the Ziegler-Natta catalysts
- 2- the weight average molecular weight
- 3- the flash point
- 4- addition polymerizations.
- 5- the doctor point

B- Give the first steps (briefly explain) of the crude oil treatment

30

40

Good Luck

Signature:
Examiner:

Dr. Emaad Taha Bakir



Examination Committee Seal
Date: 18 / 7 / 2016

Signature:

Head of Department:
Dr. Abdullah saleem khazaal



The Second Corse Exams 2015 – 2016 / First Attempt (Form 1)

No.	Note: Answer All Questions	Degree
	Q1) How do you select analytical technique for your project? Explain briefly ?	15
	Q2) What is meaning of following ? a) H-point b) LOQ c) LOD d)precision e) Accuracy .	15
	Q3) What are the differences between calibration curve , standards addition method and internal standard in Instrumental analysis ?	20
	Q4) Put (T) or (F) on suitable sentence? a) Electrophoresis technique is used for analysis of bio-chemical materials. b) Chromatographic technique is used for analysis of pharmaceutical materials. c) ICP used for analysis of lanthanide metals. d) AAS used for analysis of heavy metals. e) Visible spectrophotometer used for analysis of colored compound.	20
<i>Good Luck</i>		

Signature:
Examiner:
Dr. Husain hasan Kharnoob

22/5/2016

Examination Committee Seal

Date: 22/5/2016

أبتهار خط: عبدالله

Signature:
Head of Department:
Dr. Abdullah saleem khazal



Advanced Bio Chemistry

Q1: Select the single best answer for each of the following questions:

1. In enzyme kinetics K_m implies

(A) The substrate concentration that gives one half V_{max} (B) The dissociation constant for the enzyme substrate complex (C) Concentration of enzyme (D) Half of the substrate concentration required to achieve V_{max}

2. When the velocity of an enzymatic reaction equals V_{max} , substrate concentration is

(A) Half of K_m (B) Equal to K_m (C) Twice the K_m (D) Far above the K_m

3. Allosteric inhibition is also known as

(A) Competitive inhibition (B) Non-competitive inhibition (C) Feedback inhibition (D) None of these

4. In competitive inhibition, the inhibitor

(A) Competes with the enzyme (B) Irreversibly binds with the enzyme (C) Binds with the substrate (D) Competes with the substrate

5. An example of enzyme inhibition:

(A) Reversible inhibition (B) Irreversible inhibition (C) Allosteric inhibition (D) All of these

6- The aldose sugar is

(A) Glyceraldehyde (B) Ribulose (C) Erythrulose (D) Dihydroxyacetone

7- Polysaccharides are

(A) Polymers (B) Acids (C) Proteins (D) Oils

8- Isomers differing as a result of variations in configuration of the $—OH$ and $—H$ on carbon atoms 2, 3 and 4 of glucose are known as

(A) Epimers (B) Anomers (C) Optical isomers (D) Stereoisomers

9- The most important epimer of glucose is



(A) Galactose (B) Fructose (C) Arabinose (D) Xylose

10-The technique for purification of proteins that can be made specific for a given protein is

(A) Gel filtration chromatography, (B) Ion exchange chromatography, (C) Electrophoresis
(D) Affinity chromatography

11. Denaturation of proteins results in

(A) Disruption of primary structure, (B) Breakdown of peptide bonds, (C) Destruction of hydrogen bonds, (D) Irreversible changes in the molecule

12-At a pH below the isoelectric point, an amino acid exists as

(A) Cation, (B) Anion, (C) Zwitterion (D) Undissociated molecule

13- An amino acid that does not take part in α -helix formation is

(A) Histidine (B) Tyrosine, (C) Proline (D) Tryptophan

14-Primary structure of proteins can be determined by the use of

(A) Electrophoresis (B) Chromatography, (C) Ninhydrin (D) Sanger's reagent

15- Electrostatic bonds can be formed between the side chains of

(A) Alanine and leucine, (B) Leucine and valine, (C) Aspartate and glutamate (D) Lysine and aspartate

16- Primary structure of a protein is formed by

(A) Hydrogen bonds (B) Peptide bonds, (C) Disulphide bonds (D) All of these

17- During denaturation of proteins, all of the following are disrupted except

(A) Primary structure (B) Secondary structure, (C) Tertiary structure (D) Quaternary structure

18. In RNA molecule

(A) Guanine content equals cytosine (B) Adenine content equals uracil (C) Adenine content equals guanine (D) Guanine content does not necessarily equal cytosine content



19. The carbon of the pentose in ester linkage with the phosphate in a nucleotide structure is

(A) C1 (B) C3 (C) C4 (D) C5

20. Uracil and ribose form

(A) Uridine (B) Cytidine (C) Guanosine (D) Adenosine

Q2 : The active site of lysozyme contains two amino acid residues essential for catalysis: Glu35

5-2

and Asp52. The pKa values of the carboxyl side chains of these residues are 5.9 and 4.5, respectively. What is the ionization state (protonated or deprotonated) of each residue at pH 5.2,

Glu

As

the pH optimum of lysozyme? How can the ionization states of these residues explain the pH-activity profile of lysozyme

Q3: One method for separating polypeptides makes use of their differential solubilities. The solubility of large polypeptides in water depends upon the relative polarity of their R groups, particularly on the number of ionized groups: the more ionized groups there are, the more soluble the polypeptide. Which of each pair of the polypeptides that follow is more soluble at the indicated pH?

(a) (Ala-Ser-Gly) or (Asn-Ser-His) at pH 6.0

(b) (Ala-Asp-Gly) or (Asn-Ser-His) at pH 3.0

Q4 Explain:

الاجابة
كتر عين (2)

1- Type of inhibition. ✓

2- Classification of amino acids.

3- polysaccharide ;

4- The difference between RNA and DNA . ✓

د. عبد الله محمد خزعل
رئيس قسم الكيمياء

Firas
Dr. Firas.T. Maher

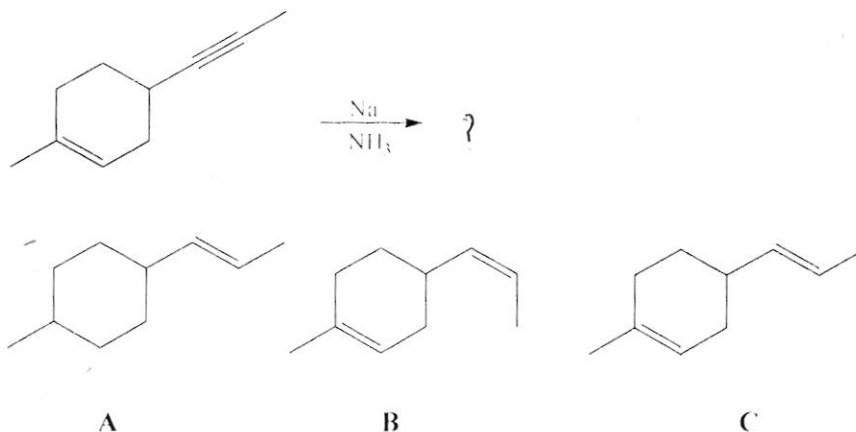


Advance Organic Chemistry

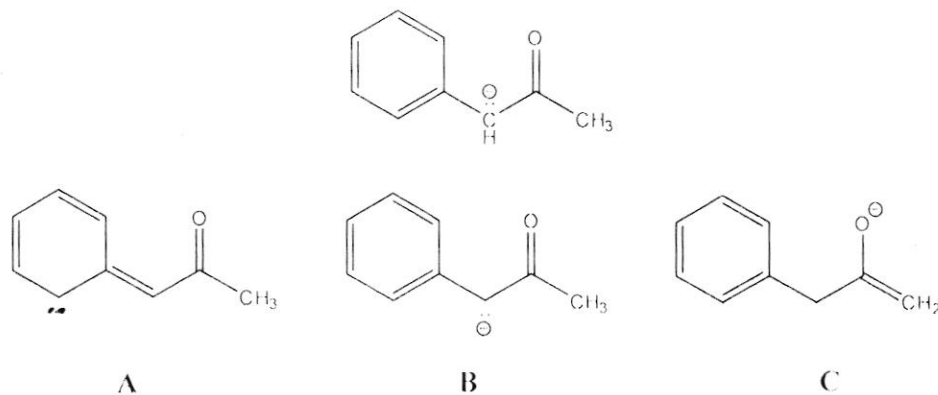
Note: Answer All Questions

Q1: A- Choose the **right** answer for each of the following. (3degree)

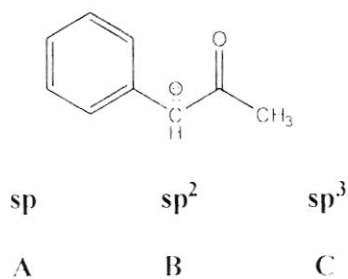
1- Which of these compounds is the major product of the reaction conditions shown?



2- Which of the following is not resonance form of the anion below?



3- What is hybridization of the negatively charged carbon in the structure below?

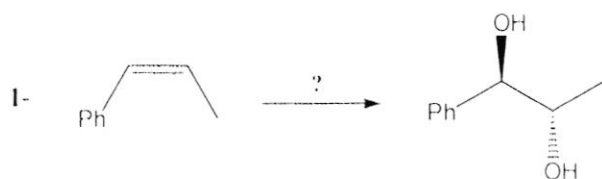




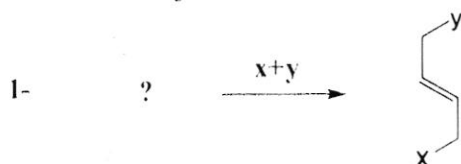
B- Which of the following statements is false? (4degree)

- Both S_N^1 & S_N^2 reaction are exothermic.
- S_N^1 means substitution nucleophilic reaction.
- If the reaction proceeds via a planar carbocation the reaction is not stereoselective.
- While carbonyl groups undergo electrophilic addition reactions, the vast majority of additions to carbonyls are nucleophilic additions.

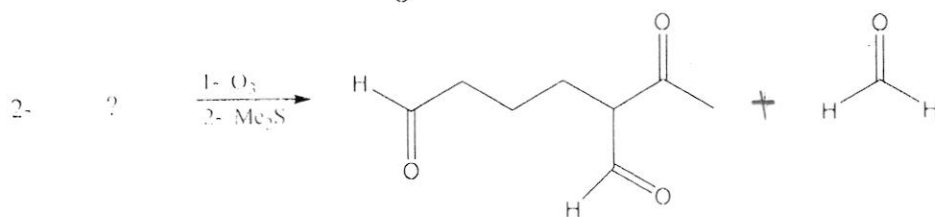
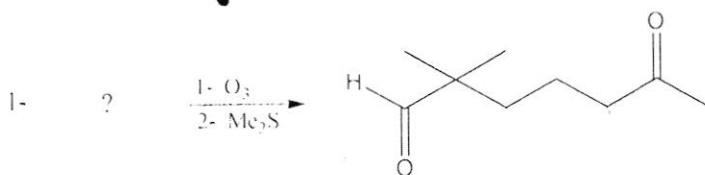
Q2: what reagent(s) would you use to conduct the following transformations? (6degree)



Q3: Draw the major reactant(s) for each of the following reactions. (8degree)

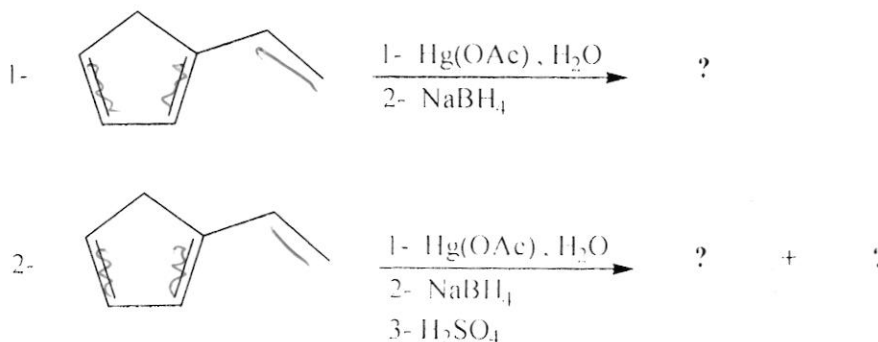


Q4: Draw the starting chemical that will undergo ozonolysis to produce the product shown.
in some cases there may be more than one satisfactory answer. (6degree)

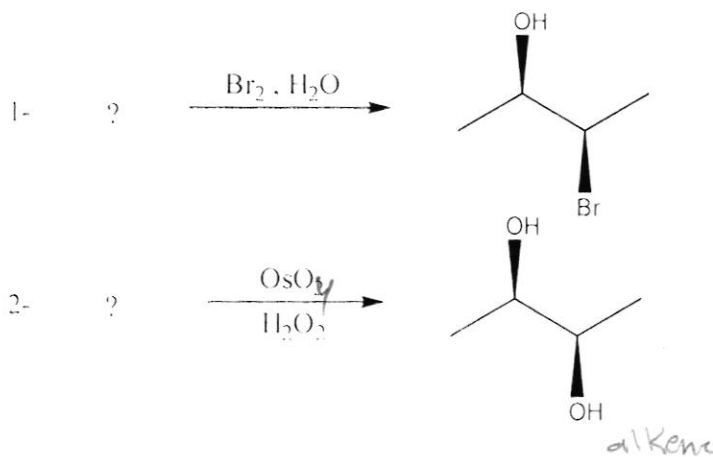




Q5: Draw the major product(s) for each of the following transformations? (6dgree)



Q6: Draw the alkane that would product the products shown. (6dgree)



Q7: A- Give the two general mechanism of alkane addition? (7dgree)

B- List how to produce a functional group (two only)?

Q8: Give the mechanism of nucleophilic addition of N to carbonyl groups. (10dgree)


Q9: Comparative between the nucleophilic addition to



(10dgree)



Good Luck


Prof. Dr. Hanaa K. Salih



الكيمياء التحليلية المتقدم

س ١/ املاً الفراغات الآتية بما يناسبها: (٦ درجة)

- ١- الفراداي الواحد يرسم ----- غرام من الفضة و ----- مول من الكوبلت Co^{2+} .
- ٢- في نصف غرام من NaCl يوجد ----- غرام صوديوم و ----- ايون من Cl^- .
- ٣- طاقة الفوتون تتناسب عكسياً مع -----.
- ٤- يحسب تردد امتصاص الاصرة من العلاقة -----.
- ٥- توجد منطقتان متميزتان في IR هما ----- و -----.

س ٢/ اكتب كلمة صح أو خطأ أمام العبارات التالية: (٥ درجة)

- ١- مول واحد من الفضة يكافئ وزن ذري من الالمنيوم.
- ٢- الازاحة الزرقاء تتضمن ازاحة الامتصاص نحو طول موجي اطول.
- ٣- أشعة IR هي أكثر طاقة من UV.
- ٤- الاوكسوكروم هو المجموعة المسؤولة عن ظهور اللون في المركبات العضوية.
- ٥- امتصاص $\text{C}\equiv\text{N}$ يظهر عند عدد موجي أقل من $\text{C}-\text{O}$.

س ٣/ (أ) وضع الاهتزازات المطية والانحنائية في مطيافية الاشعة تحت الحمراء. (٨ درجات)
(ب) ماهي الاجزاء الرئيسية للمطياف مع ذكر وظيفة كل جزء؟ (٧ درجات)

س ٤/ (أ) ماهي تطبيقات اطياف ما فوق البنفسجية؟ (٧ درجات)

(ب) ما الدوران النوعي وكيف يمكن حسابه؟ (٧ درجات)

س ٥/ في المطيافية الذرية: (٢٠ درجة)

- أ- ماهي معادلة بولتزمان مع تعليم حدودها.
- ب- باي تقنية يقدر كل من الخارصين والصوديوم ولماذا؟
- ج- كيف يمكن تقليل التأين.
- د- بين عمل مصباح كاثود مجوف.

س ٦/ في البولاروغرافي: (٢٠ درجة)

- أ- ما معادلة ايكوفك مع تعليم حدودها.
- ب- ما التيار المقاس (مع التعريف) وكيف يمكن منع حدوث التيارات الاخرى.
- ج- ما قطب العمل في هذه التقنية مع بيان محاسنه.
- د- ما الذي يعتبر صفة نوعية مشخصة للمادة (مع التعريف).

H= 1 , Na=23 , Co= 59 , Cl= 35.5

أ.د. علي ابراهيم خليل

رئيس قسم الكيمياء

رئيس قسم الكيمياء



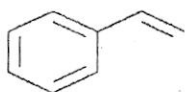
Advanced Chemistry

Q1/ Q1- What the glassy state ? Discuss the relation between T_g and T_m in polymer materials?

25

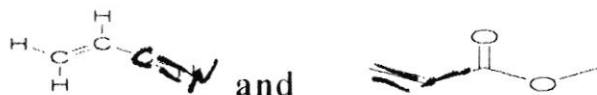
Q2- (A)-What are the factors affecting the stereoregularity of the polymers?

(B)- Give the configuration isomerization for polymerization of the monomer



25

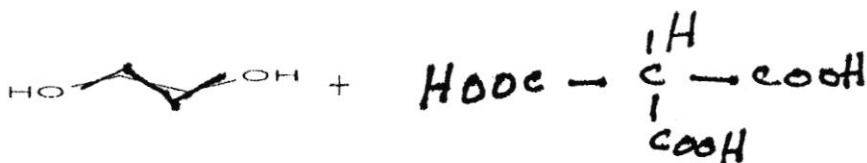
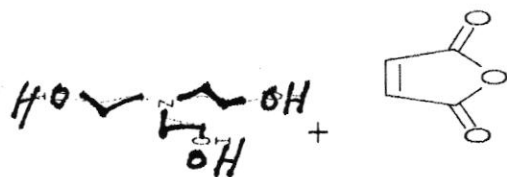
Q3- (A)-Prepare diblock copolymer by suitable polymerization of the monomers



25

(B)- If you have a polymer sample, How can you measure the M.Wt and separate its fractions according to their M.Wt

Q4- (A)- polymerize the following monomers



25

(B)- how can you avoid the problems in (N 6,6) industry or syntheses

الأستاذ المساعد
الدكتور
بشیر فاضل عبد الله

أ.د. محمد صابر



The First Corse Exams 2016– 2017 / (Form 1)

No	Note: Answer All Questions	Degree
Q1	<p>Put the verb into the correct form, positive (choose only five).</p> <ol style="list-style-type: none"> The third group is the alkali metals. These elements----- very strongly with water.(react). I saw you in the park yesterday. You ---- (sit)on the grass and reading a book. I felt very tired when I got home' so I ...(go) straight to bed. It was very noisy next door. Our neighbours---- (have) a party. I was very tired when I got home. I had ----(work) hard all day. Let's go out now. it ----- (rain) any more. The police will----- (catch) the thief. 	15
Q2	<p>Choose the correct answer in the brackets. (choose only ten).</p> <ol style="list-style-type: none"> Bill was just going to bed <u>when</u> his wife from work. (is going, is coming home, had come home, has been coming home, came home. The bus was late. The passengers were angry because they for half an hour.(were waiting, have been waiting ,had been waiting ,have waited) He is -----to buy a new computer.(wanting, wants , wanted) The witness ----- silent.(kept, keeping ,was kept). Would you like to come with------(us / we) . Suha seem (Sadly, sad) . I play tennis but I'm not very..... (good, well) Write your name ----- . the top of the page. (in ,at ,onto ,for) It was a boring weekend. anything.(I didn't , I don't do, I didn't do). Madonna----- three albums since 2006. (made, has made, has been made). Lavoisier noticed that hydrogen atoms are always present ---water. (on, in, at) Atoms are ----- of three basic parts; protons, neutrons, and electrons. (made up, make up, making up). 	25
Q3	<p>Change the following sentences from the active into the passive form.</p> <ol style="list-style-type: none"> The wolves eat the sheep. The students have invited us to the party. They gave a prize to the participant who solved this question. The engineers have lost the original design. We are repairing the machine now. I don't like people telling me what to do. They will have completed the project before the teacher arrives I keep the butter in the fridge. 	16
Q4	<p>Join each pair of sentences of the following:-using (While, when, before after, so, because). (choose ten only).</p>	20

1	The audience left.	The play had finished.
2	John was tired.	He had been working.
3	I will see a film.	I finish my homework.
4	<i>He left to China</i>	<i>He had been teaching at the university for more than a year.</i>
5	Mary and Samantha left on the bus before I arrived.	I did not see them at the bus station
6	Mary and Samantha arrived at the bus station before noon.	I did not see them at the station
7	you're doing experiments that involve using harmful chemicals or fire,	You need eye Goggles to protect your eyes.
8	<i>I stayed at home.</i>	<i>it was raining.</i>
9	Marijuana is less toxic than alcohol or tobacco.	Some people believe marijuana should be legal.
10	The eighth group consists of the inert gases.	They do not react easily with other substances.
11	<i>Ahmed did his homework.</i>	<i>Anas helped him.</i>
11	<i>The boy was riding a bicycle.</i>	<i>I saw a boy.</i>

Q5 Translate the following passage into Arabic :-(choose A or B)

24

AN ATOM APART

Have you ever walked through a cloud of gnats 1 on a hot summer, only to have them follow you? No matter how you swat 2 at them, or even if you run, they won't leave you alone. If so, then you have something in common with an atom.

Atoms are the building blocks of molecules, which when combined, make up everything. From the smallest one-celled amoeba 3, to every person who has ever lived, to the largest and brightest stars in the sky, atoms are everywhere.

Even way back in the time of ancient Greece, they wondered about atoms. That's where the word comes from, ancient Greece. The word A'tomos, when translated into English, means: something that cannot be divided any further. So what's an atom look like? Up until very recently no one could say one way or another.

Technically we can't see individual atoms, since there are no microscopes powerful enough. Since technology improves all the time, it may not be long before we can actually see a whole atom through a special microscope. Even though scientists cannot see atoms with microscopes, they have developed ways to detect them and learn about them.

Atoms are made up of three basic parts; protons, neutrons, and electrons. There is a core, or nucleus, and an electron cloud. The nucleus is made up of positively charged protons and neutral neutrons. The nucleus is held closely together by electromagnetic force.

The negatively charged electrons are bound to the nucleus, and zap 4 around it in a cloud. Do you remember the cloud of gnats? The gnats would be the electrons

zipping around you, the nucleus.

Atoms and Elements

The world contains millions of different chemical substances, which are made of just over 100 different elements. You can find their names in the periodic table. You will probably recognise many of the names in the table: e.g. oxygen, nitrogen, chlorine, fluorine, iodine, iron, copper, silver, gold, platinum, uranium. Some of their names are quite pretty: e.g. beryllium and zirconium. Others are quite unpronounceable: e.g. ytterbium and seaborgium. Elements have been named after people, e.g. curium and einsteinium, after places, e.g. europium and californium, after planets e.g. neptunium and plutonium, or after their properties e.g. radium.

Pure elements are made of very tiny particles called atoms. Each element has a unique kind of atom: it is the number of protons in the nucleus of an atom that determines what element it is. Atoms can be combined together to make molecules. Molecular elements contain only one kind of atom e.g. oxygen, nitrogen and hydrogen. Molecular compounds contain two or more different kinds of atoms bonded together e.g. carbon dioxide, sucrose and proteins. The chemicals in our bodies are largely composed of the elements carbon, hydrogen, oxygen, nitrogen and phosphorus. Other elements are present in our bodies in much smaller amounts. Iron is an important part of the haemoglobin molecule in our blood. Without iron, our blood would not be able to carry oxygen from the lungs to our tissues for respiration.

At first it will seem an awful lot to learn, but there are rules which will make it much easier to remember the names of chemicals and how they are formed. Burning a pure element in oxygen will produce an oxide. There are no prizes for guessing which elements have been burnt to produce copper oxide, iron oxide, calcium oxide, though a few are more difficult. We do not usually call water by its chemical name, which is hydrogen oxide. In some cases there are two or more different oxides that can be produced when an element burns. Carbon monoxide and carbon dioxide are both produced when carbon containing substances are burnt. These two gases both contain the elements carbon and oxygen, but one contains twice as much oxygen.

Signature:

Examiner: Ihmood.khalaf jebur

Examination Committee Seal

Date: / 1 / 2017

Signature:

Head of Department:

Dr. Abdullah S. Khazaal

الاستاذ المساعد
الدكتور
ابتهال قحطان عبدالله

Time allowed :3 hours

final examination in Enzyme
2012

Chemistry
department

Q1: Select the single best answer for each of the following questions:

1. In enzyme kinetics K_m implies $\frac{1}{2} V_{max}$

- (A) The substrate concentration that gives one half V_{max} (B) The dissociation constant for the enzyme substrate complex (C) Concentration of enzyme (D) Half of the substrate concentration required to achieve V_{max}

2. When the velocity of an enzymatic reaction equals V_{max} , substrate concentration is

- (A) Half of K_m (B) Equal to K_m (C) Twice the K_m (D) Far above the K_m

3. Allosteric inhibition is also known as

- (A) Competitive inhibition (B) Non-competitive inhibition
(C) Feedback inhibition (D) None of these

4. In competitive inhibition, the inhibitor

- (A) Competes with the enzyme (B) Irreversibly binds with the enzyme
(C) Binds with the substrate (D) Competes with the substrate

5. An example of enzyme inhibition:

- (A) Reversible inhibition (B) Irreversible inhibition (C) Allosteric inhibition (D) All of these

6. Fischer's 'lock and key' model of the enzyme action implies that

- (A) The active site is complementary in shape to that of substance only after interaction.
(B) The active site is complementary in shape to that of substance
(C) Substrates change conformation prior to active site interaction
(D) The active site is flexible and adjusts to substrate

7. From the Lineweaver-Burk plot of Michaelis-Menten equation, K_m and V_{max} can be determined when V is the reaction velocity at substrate concentration S , the X-axis experimental data are expressed as

- (A) $1/V$ (B) V (C) $1/S$ (D) S

8. Factors affecting enzyme activity:

- (A) Concentration (B) pH (C) Temperature (D) All of these

9. In reversible non-competitive enzyme activity inhibition

- (A) V_{max} is increased (B) K_m is increased (C) K_m is decreased (D) Concentration of active enzyme is reduced

10. From the Lineweaver-Burk plot of Michaelis-Menten equation, K_m and V_{max} can be determined when V is the reaction velocity at substrate concentration S , the X-axis experimental data are expressed as

- (A) $1/V$ (B) V (C) $1/S$ (D) S

$$V_{max} = 200 \times 10^9$$

$$K_m = 10$$

Q 2: The following velocity data were obtained .Calculate K_m , V_{max} and type of inhibitor.

[S]	Control nmol/min	V(+I at 6μM) nmol/min
0.200	16.67	6.25
0.333	24.98	10.00
0.500	33.33	14.29
1.00	50.00	25.00
2.50	71.40	45.45
3.33	76.92	52.63
5.00	83.33	62.50

Q3: An enzyme was assayed at an initial substrate concentration of $(2 \times 10^{-5})M$. In (6 min) half of the substrate had been used .The K_m for the substrate is $(5 \times 10^{-3} M)$.Calculate (a) k , (b) V_{max} and (c) the concentration of product produced by (15 min).

$$t_{1/2} = 6 = \frac{0.693}{k}$$

$$P = 1.63 \times 10^{-5}$$

$$k = \frac{V_{max}}{K_m}$$

Q4: Explain:

- 1- Methods of plotting enzyme kinetics data .
- 2- Feed-back inhibition.
- 3- Models of competitive inhibition .
- 4- Allosteric enzyme.
- 5- Why determine K_m .

SL

Wolf angustissim
Eedle sketcherd

Q5: A- Drive the following equation :(only tow)

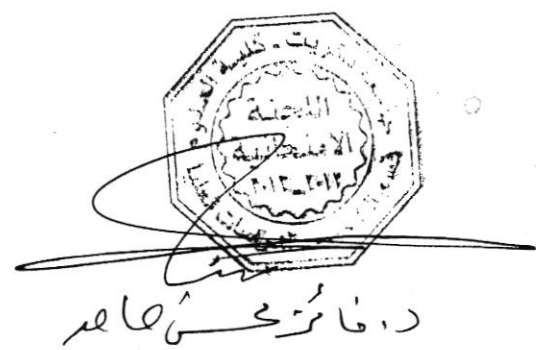
- 1- $v = 1/2 V_{max}$
- 2- $[S]_{0.9}/[S]_{0.1} = 81$
- 3- $V = V_{max}$

B-Sketch the appropriate plots on the following axes . Assume that simple michaelis-menten equation kinetics.

- 1- v vis $[S]$, 2- v vis $[E]_t$, 3- $[S]$ vis time , 4- $[P]$ vis time , 5- V_{max} vis time
- 6- $1/v$ vis $1/[S]$, 7- $[ES]$ vis time

التعاون
الحسن
التأني
الحنان
التفكير

Firas
Dr. Firas Taher Maher





Q1. Answer 10 of the following: (70 Marks).

1. First ionization energy of Na is greater than that of P.
2. Ionic radii decreases on going from left to right in the periodic table.
3. Oxidation no of Mn in $\text{KMnO}_4 = +7$. ✓
4. Diethylene triamine is a bidentate ligand
5. Coordination no. of Co in $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$ is 7.
6. Oxidation no. of Co in $[\text{CoF}_6]^{3-}$ is -3. x
7. Coordination no 5 has two possible shapes. ✓
8. $[\text{NiCl}_4]^{2-}$ is square planer while $[\text{Ni}(\text{CN})_4]^{2-}$ is tetrahedral.
9. Hybridization of Co in $[\text{Co}(\text{NH}_3)_6]^{2+}$ is sp^3d^2 .
10. NH_3 is a Lewis acid while BF_3 is a Lewis base. ✓ x
11. $\{\text{IrCl}_3(\text{PPh}_3)_3\}$ has two geometrical isomers
12. Crystal field in tetrahedral complexes is greater than that in octahedral complexes
13. Pi-bonded ligands such as CO increase delta octahedral.
14. Electronegativity of Br^- is greater than that of I^-
15. Hg is non transition element.

Q2. (30 Marks)

A. Which of the following complexes will not show color.

1. $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$, 2. $\text{K}_3[\text{VF}_6]$, 3. $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$, 4. $[\text{NiCl}_4]^{2-}$. (Sc=21, V=23, Cr=24, Ni=28).

B. Diagram the electronic arrangements in $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ and $[\text{Fe}(\text{CN})_6]^{4-}$ for both VBT and CFT. (Fe = 26).

Good Luck

Prof. Subhi A. Al-Jibori



3d

15² 25² 28² 35² 38² 3d¹⁰
45² 48²



17. Primary structure of a protein is formed by

- (A) Hydrogen bonds (B) Peptide bonds (C) Disulphide bonds (D) All of these

18. A Holoenzyme is

- (A) Functional unit (B) Apo enzyme (C) Coenzyme (D) All of these

19. The kinetic effect of purely competitive inhibitor of an enzyme

- (A) Increases K_m without affecting V_{max} (B) Decreases K_m without affecting V_{max} (C) Increases V_{max} without affecting K_m (D) Decreases V_{max} without affecting K_m

20. In enzyme kinetics K_m implies

- (A) The substrate concentration that gives one half V_{max} (B) The dissociation constant for the enzyme substrate complex (C) Concentration of enzyme (D) Half of the substrate concentration required to achieve V_{max}

أ. د. ت. ز. هادي

أ. د. ز. خ. هادي



اسم المادة : اختياري (ناتو)
الزمن : ٣ ساعات
التاريخ : ٢٠١٣/٦/



جامعة تكريت
كلية العلوم
قسم : الكيمياء
المرحلة : ماجستير

جودة الاجابة في الامتحان النهائي طريقك نحو النجاح

أسئلة الامتحانات النهائية لطلبة الدراسات العليا للعام الدراسي (٢٠١٣/٢٠١٢)

الدرجة	الأسئلة	رقم السؤال
٢٠	ما هو علم النانو وما هي اهم تطبيقاته .	س ١
٢٠	ما هو سبب تغير صفات المواد في علم النانو وضح ذلك .	س ٢
٢٠	ما هي وسائل وتقنيات النانو عددها و اشرح واحدة منها .	س ٣
٢٠	اشرح كيف يستخدم الذهب في معالجة السرطان باستخدام تقنية النانو .	س ٤
٢٠	ما هي انابيب النانو الكربونية وكيف تحضر وما هي اهم تطبيقاتها ؟	س ٥

التوقيع :
رئيس القسم
ا.م.د. اياد سعدي حميد

التوقيع :
مدرس المادة
ا.م.د. فائز محسن حامد

المضافات البوليمرية

طلبة الماجستير

جامعة تكريت

كلية العلوم

قسم الكيمياء

س1: ماهي الملدنات وضح اصنافها بالتفصيل مع ذكر المعادلات الكيميائية لكل صنف؟

س2: (أ) عرف: 1: مضادات الحرائق

2: التحلل و التفكك الحراري التأكسدي

Auto senergestic effect:3

ب: ما هي نظريات التلدين و ضحها؟

س3: كيف تقوم مانعات الاكسده بدورها اشرح ذلك ثم وضح عن طريق اخذ احد هذه المانعات و اشرح طريقة عمله على البوليمر بالمعادلات.

س4: علل ما يأتي بشكل علمي:

(أ) طلاء قناني المذيبات باللون الاسود

(ب) توقف استعمال Na_2CO_3 كماده مضافه للبوليمر

(ج) لا يمكن استخدام البوليمر كماده صناعيه بدون مضافات

س5: بين اي البوليمرات التاليه اكثر عرضه للاكسده ولماذا؟ وضح ذلك بالمعادلات.

*بولي اثلين واطي الكثافه

*بولي ستايرين

*بولي كلوريد الفينيل PVC

ما هي المضافات التي تضاف لهذه البوليمرات لمنع الاكسده

ملاحظه: الاجابه على كافة الاسئله

استاذ ماده : د.علي طه السامرائي



Q1: Give the wright answer of the following:

- 1- hydrogen gas can be produced by thermal cracking of derivatives A- heavy petroleum derivatives B- light petroleum derivatives C- kerosene
- 2- urea production increase by A- increasing pressure B- reducing pressure C- reducing pressure and heat
- 3- cement composed of A- organic and inorganic materials B- inorganic salts C- crystalline inorganic salts
- 4-methanol can be produced from reaction of hydrogen and carbon A-carbon dioxide B- carbon C- not A and B
- 5- absolute alcohol produced from reaction A- of ethylene with acids B- dibutyl phalate C- not A and B
- 6- detergent (Shmpoo) is A- soap B- detergent C- mixture of both A and B
- 7- glycerol can be used in manufacturing of A- soap B- detergent C- oils
- 8- sodium tripolyphosphate increase the A- cleaning effect B- the brightness of the clothes C- suds
- 9- the main compound of cement is A- calcium silicate B-aluminum silicate C- not A and B
- 10- Biuret percent in urea production should be A- 0.005% B- 0.5% C- 1%.

Q2-:

A- Define the following expression:

- 1- the degree of polymerization D_p
- 2- the dispersity index
- 3- the flash point
- 4- condensation polymerizations.
- 5- the aniline point

B- Give four of the hydrocarbon species in crude oil and indicate their type

Q3:- complete the following expression:

- 1- the chemical concept of soap is -----
- 2- the industrial processes include -----
- 3- the feature of urea fertilizers are -----
- 4- methanol is produced from reaction of -----
- 5- the chemical concept of fats or oil is -----
- 6- increase the temperature in ammonia production lead to -----
- 7- the activation energy of the chemical reaction is affected by -----
- 8- the features of continuous system are -----
- 9- one of the most important industrial problem is -----
- 10- increasing the pressure in urea production lead to -----



Prof. Emaad T. Bakir

Q3:- complete the following expression:

- 1- the chemical concept of soap is -----
- 2- the industrial processes include -----
- 3- the feature of urea fertilizers are -----
- 4- methanol is produced from reaction of -----
- 5- the chemical concept of fats or oil is -----
- 6- increase the temperature in ammonia production lead to -----
- 7- the activation energy of the chemical reaction is affected by -----
- 8- the features of continuous system are -----
- 9- one of the most important industrial problem is -----
- 10- increasing the pressure in urea production lead to -----



Prof. Emaad T. Bakir



س1 : عرف مايتاتي : 1- القانون الاول للثرموداينمك . 2- الكيمياء الكهربائية . 3- رتبة التفاعل . 4- ميكانيك الكم . 5- معادلة شروودنكر .

س 2 : 1- اي من الدوال التالية لا يمكن قياسها عمليا في المختبر ؟

أ- ΔS . ب- q . ج- ΔH . د- E (جهد الخلية)

2-اي من الدوال التالية يمكن استخدامها للاستدلال على تلقائية التفاعل ؟

أ- ΔG . ب- ΔS . ج- ΔH . د- W .

3- ان العلاقة التي استنتجها بويل هي العلاقة بين الحجم مع :

أ- الضغط بثبوت درجة الحرارة . ب- الضغط بعدم ثبوت درجة الحرارة . ج- درجة الحرارة بثبوت الضغط . د- درجة الحرارة بعدم ثبوت الضغط .

4- ثابت سرعة التفاعل يكون ثابتا اذا كان:

أ- درجة الحرارة ثابتة . ب- درجة الحرارة متغيرة . 3- الحجم ثابت . 3- درجة الحرارة والحجم ثابتان .

5-السعة الحرارية عن ضغط ثابت تكون اكبر من السعة الحرارية عند حجم ثابت ، لماذا ؟

أ- بسبب ثبوت الحجم . ب- بسبب ثبوت الحجم والضغط . 3- بسبب ثبوت الشغل . 4- بسبب تغير الحجم وحصول شغل .

6- الشغل المنجز في العملية العكسية يكون من الشغل المنجز في العملية غير العكسية ؟

أ- اكبر دائما . ب- اكبر في بعض الحالات . ج- اكبر عند ثبوت درجة الحرارة . د- اكبر عند ثبوت الحجم .

7- في عملية عكسية ايزوثرمية تمدد 1 مول من غاز من 2 لتر الى 3 لتر عند 310 كلفن ، يكون الشغل المنجز :

أ- -1045.02 J . ب- 1045.02 J . ج- -245 J . د- -9899 J .

8- عندما يعمل عامل رياضي على دالة ما لينتج نفس الداله مضروبة بثابت يقال عن تلك الداله :

أ- دالة ذاتية . ب- داله غير ذاتية . ج- دالة متغيرة . د-داله ثابتة .

9- تفاعلات الرتبة الثالثة نادرة الحدوث بسبب :

أ- صعوبة تصادم ثلاث جزيئات في ان واحد . ب- زياده الضغط بين الجزيئات . ج- تباعد الجزيئات عن بعض . د. لا يوجد قانون رياضي مضبوط يحدد السرعه .

10- مادة A بتركيز 0.075 mol.L^{-1} تفاعلت واصبح تركيزها $0.0534 \text{ mol.L}^{-1}$ بعد مرور 9 دقائق . فان سرعة التفاعل تكون :

أ- $0.00004 \text{ mol.L}^{-1}.\text{min}^{-1}$. ب- $0.0987 \text{ mol.L}^{-1}.\text{min}^{-1}$. ج- $0.00897 \text{ mol.L}^{-1}.\text{min}^{-1}$. د- $0.00234 \text{ mol.L}^{-1}.\text{min}^{-1}$.

11- جهد قطب الهيدروجين القياسي يساوي صفر لماذا :

أ- قيمة اعتباطية لتمكننا من حساب جهود الاقطاب الاخرى . ب- لانه غاز حامل . ج- ليس لديه القابلية على الاختزال . د- لانه قيمة جهده قليله جدا .

12- انثالي تكوين العناصر يساوي صفر :

أ- قيمة اعتباطية تم فرضها لحساب جهود المركبات . ب- لان العناصر قيمة تكوينها قليله . ج- لان العناصر ليس لها انثالي تكوين . د- قيمه اعتباطية لتسهيل حساب درجات الحرارة .

13- ميكانيك الكم يتعامل مع :

أ- الجسيمات الاعتيادية . ب- الانظمه الكيميائيه والجسيمات الاعتيادية . ج- مع الاجرام الفضائية . د- الانظمه الكيميائيه .

14- العدد المركب يتكون من جزأين :

أ- عدد ايجابي وعدد سلبي . ب- عدد كبير وعدد كسري . د- عدد حقيقي وعدد خيالي . د- عدد صحيح وعدد كسري .

15- من النظريات التقريبية لحلول مسائل ميكانيك الكم :

أ- نظرية التغير والنظرية القديمه . ب- نظرية الكم . ج- النظرية التقليديه . د- نظرية التغير ونظرية التشويش .



مدرس المادة : عبدالله سليم خزل

8- عندما يعمل عامل رياضي على دالة ما لينتج نفس الدالة مضروبة بثابت يقال عن تلك الدالة :

أ- دالة ذاتية . ب- دالة غير ذاتية . ج- دالة متغيرة . د- دالة ثابتة .

9- تفاعلات الرتبة الثالثة نادرة الحدوث بسبب :

أ- صعوبة تصادم ثلاث جزيئات في آن واحد . ب- زياده الضغط بين الجزيئات . ج- تباعد الجزيئات عن بعض . د- لا يوجد قانون رياضي مضبوط يحدد سرعه .

10- مادة A بتركيز 0.075 mol.L^{-1} تفاعلت واصبح تركيزها $0.0534 \text{ mol.L}^{-1}$ بعد مرور 9 دقائق . فان سرعة التفاعل تكون :
أ- $0.00004 \text{ mol.L}^{-1}.\text{min}^{-1}$. ب- $0.0987 \text{ mol.L}^{-1}.\text{min}^{-1}$. ج- $0.00897 \text{ mol.L}^{-1}.\text{min}^{-1}$. د- $0.00234 \text{ mol.L}^{-1}.\text{min}^{-1}$.

11- جهد قطب الهيدروجين القياسي يساوي صفر لماذا :

أ- قيمة اعتباطية لتمكننا من حساب جهود الاقطاب الاخرى . ب- لانه غاز خامل . ج- ليس لديه القابلية على الاختزال . د- لانه قيمة جهده قليلة جدا .

12- انثالي تكوين العناصر يساوي صفر :

أ- قيمة اعتباطية تم فرضها لحساب جهود المركبات . ب- لان العناصر قيمة تكوينها قليلة . ج- لان العناصر ليس لها انثالي تكوين . د- قيمه اعتباطية لتسهيل حساب درجات الحرارة .

13- ميكانيك الكم يتعامل مع :

أ- الجسيمات الاعتيادية . ب- الانظمه الكيميائية والجسيمات الاعتيادية . ج- مع الاجرام الفضائية . د- الانظمه الكيميائية .

14- العدد المركب يتكون من جزأين :

أ- عدد ايجابي وعدد سلمي . ب- عدد كبير وعدد كسري . د- عدد حقيقي وعدد خيالي . د- عدد صحيح وعدد كسري .

15- من النظريات التقريبية لحلول مسائل ميكانيك الكم :

أ- نظرية التغير والنظرية القديمه . ب- نظرية الكم . ج- النظرية التقليدية . د- نظرية التغير ونظرية التشويش .



مدرس المادة : عبدالله سليم خزعل