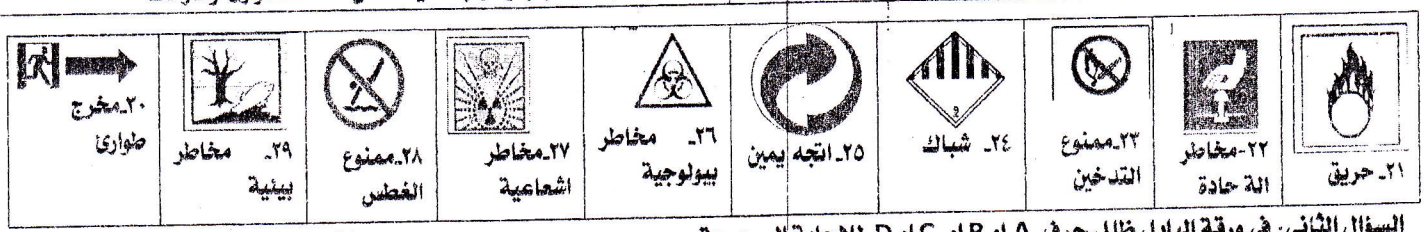
امتحان نهاية الفصل الدراسي لجميع المستويات المقرر: أخلاقيات المهنة والسلامة المهنية رقم المقرر ورمزه: F300	جامعة أسيوط كلية العلوم جامعة اسيوط	الزمن: ساعتان ٣ يونيـــة ٢٠٢٤ الاجابة في ورقة البابل

السؤال الاول: في ورقة البابل ظلل (T) للعبارة الصحيحة أو ظلل (F) للعبارة الخاطئة لما يأتي: (٣٠ درجة)

١- الميثاق الاخلاقي: مجموعة من القيم التي تسعي المؤسسة للالتزام بها اثناء العمل.	١١- يؤدي النهوض بالملكية الفكرية الي دفع عجلة التنمية الاقتصادية
٢- من مبادئ واخلاقيات مهنه التعليم الثقة والاحترام المتبادل	١٢- الخبرة والسلامة من أخلاقيات البحث العلمي
٣- اعـــرف اكثر عن علامات السلامة المهنية فهي لغة عالميـــة	١٣- أن تضيء شمعة صغيرة خير لك من أن تلعن الظلام.
٤- التخلص من مخلفات المعامل يكون بالحرق الآمن ودفن الرماد في مدفن آمن	١٤- احرص على التدريب فهو نشاط منظم لتحسين الأداء الوظيفي
٥- التقرير هو عرض كتابي او شفوي مركز لموضوع معين يقدمه فرد او مجموعه	١٥- الالتزام بالأخلاقيات يقوم السلوك، والاهتمام بالسلامة يحمي الحياة.
٦- Code of Ethics تعني اخلاقيات المهنة والسلامة المهنية	١٦- الدفاع عن شرف المهنة ليس من مبررات افشاء الأسرار المختبرية
٧- احرص على الجودة في عملك فالجودة لها سقف	١٧- اللون الازرق في العلامات الارشادية يعني ممنوع
٨- يعد سرقة علمية استخدم افكار من موقع على الانترنت والاشارة اليه	١٨- تعرف الكوارث بأنها حوادث غير مفاجئة لقوى الطبيعة او الانسان
٩- معرفة علامات السلامة المهنية من المهارات المهنية المكتسبة للمقرر	١٩- عند حدوث الزلزال يجب تدريب العاملين
١٠- ضرورة استخدام معدات الوقاية والسلامة الشخصية بعد العمل.	٢٠- المفاجاة و الاضطراب والارتباك ليست من سمات الطوارئ والازمات



٢١- حريق | ٢٢- مخاطر الة حادة | ٢٣- ممنوع التدخين | ٢٤- شباك | ٢٥- اتجه يمين | ٢٦- مخاطر بيولوجية | ٢٧- مخاطر اشعاعية | ٢٨- ممنوع الغطس | ٢٩- مخاطر بيئية | ٣٠- مخرج طوارئ

السؤال الثاني: في ورقة البابل ظلل حرف A او B او C او D للإجابة الصحيحة: (٢٠ درجات)

٣١- مقرر اخلاقيات المهنة Scientific Ethics يتناول اخلاقيات مهنة (A- العلميين – B- الاطباء – C- المهندسين – D- كل ما سبق)

٣٢- من اساسيات تجهيز مختبرات الكيمياء (A- وجود شفاطات هواء - B- وجود كراسي - C- وجود سلالم - D- كل ما سبق)

٣٣- .....هو كمية المادة التي تؤدي لوفاة نصف مستخدميها اذا تم تناولها دفعة واحدة (A- LD50 - B- LOL - C- LEL - D- LC50)

٣٤- من الآداب العامة لمزاولة مهنه المختبرات الطبية (A- الخبرة - B- الزهو - C- الدعاية الشخصية - D- كل ما سبق)

٣٥- مجموعه من الوظائف المتشابهة التي يمكن أن يقوم بها فرد واحد عند اللزوم (A- العمل - B- المهنة - C- الوظيفة – D- كل ما سبق)

٣٦- من الأساليب التي يمكن اللجوء اليها في إدارة الأزمة (A- المناورة والالتفاف B- الضغوط الاقتصادية C- الدبلوماسية D- كل ما سبق)

٣٧- من طرق علاج الشائعات (A- المنطقية في التعامل - B- نشر الحقائق - C- التوعية - D- كل ما سبق)

٣٨- من الأهداف العامة التي تسعي السلامة والصحة المهنية لتحقيقها (A- حماية الممتلكات B- حماية الافراد - C – العمل بأمان - D – كل ما سبق)

٣٩- MSDS لأي مادة أو جهاز هامة لسلامة (A- الجهاز - B- المستخدم - C- المادة - D- كل ما سبق)

٤٠- من عوامل ادارة الازمة (A- اتخاذ القرار المناسب في الوقت المناسب B- ضبط النفس - C- التدريب D- كل ماسبق)

٤١- التبليغ فورا في حالة اكتشاف تحاليل ايجابية لمرض (A- الجرب – B- شلل الأطفال - C- الكوليرا – D- كل ما سبق)

٤٢- عدد الدرجات الوظيفية في الجامعات المصرية (A- ٤ - B- ٥ – C- ٦ – D- ٧)

٤٣- يجب ان تحتوى شنطة الاسعافات الأولية على (A- ملينات - B- مقلصات - C- قطن طبي وشاش - D- كل ما سبق)

٤٤- الرعاف هو (A- صدمة عصبية B- رعشة الجسم - C- نزيف دموي من الانف – D- كل ما سبق)

٤٥- من الخطوات الرئيسية عند تنفيذ عملية مواجهة الكوارث (A- الانذار والتحذير – B- الاخلاء - C- الايواء - D- كل ماسبق)

٤٦- من نفايات المعامل (A- اطباق مزارع بكتيرية - B- نفايات كيمائية - C- بقايا احياء بريه - D- كل ما سبق)

٤٧- من مجالات الاخلاقيات البيولوجية (A- تأجير الارحام B- القرصنة البيولوجية – C- سرقة الجينات – D- كل ما سبق)

٤٨- من انواع الشائعات (A- الشائعة البطيئة – B- الشائعة السريعة - C- الشائعة الاستطلاعية - D- كل ما سبق)

٤٩- Plagiarism يعني (A- الانتحال - B- الاقتباس – C- البحث – D- كل ما سبق)

٥٠- من يعد ميثاق اخلاقيات المهنة ؟ (A- فريق عمل - B- رئيس المؤسسة C- الطلاب – D- كل ما سبق)

انتهت الأسئلة

مع تمنياتي بالتفوق

أ.د. ناصر الشيمي

Assiut university
Faculty of Science
Chemistry Department

Date: June 9 2024
Time: 3 h.

Final Examination In Selected Topics in Organic Chemistry (414 C)

Answer the following THREE sections:(50 Marks)

Section (A): (17 Marks)

Write on the following terms:

1- Characters of Penicillins (2 Marks)

2- Large-scale synthesis of chloramphenicol (3 Marks)

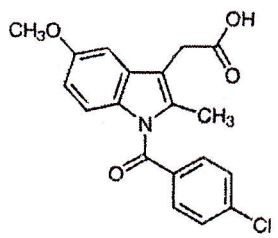
3- Structure elucidation of compound **B** ($C_6H_9O_3N_3S$) of thiamine (5 Marks)

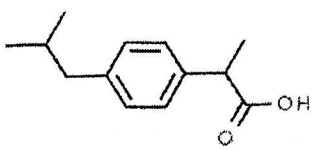
4- Properties of vitamin **B1.** (3 Marks)

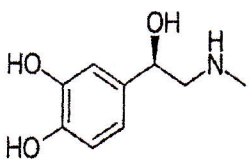
5- What is histamine? How it is released in the body? And what does histamine do? (4 Marks)

Section (B): (17 Marks)

1- Give the names (common) of the following drugs: (3 Marks)

1. 

2.- 

3. 

2. Give a short notes about: (6 Marks)

(i) Definition of Hormones and their actions.

(ii) Definition of endocrine glands, explain four types with examples.

3. Put (√) for the correct sentence and (X) for the wrong one: (4 Marks)

1. Testosterone and estrogen are considered steroid hormones.
2. Peptide hormones are hydrophylic and lipophobic (fat-loving).
3. Glucagon and insulin are types of peptide hormones.
4. Tyrosine is kind of polypeptide chain.

4. Draw the structures of the following drugs: : (4 Marks)

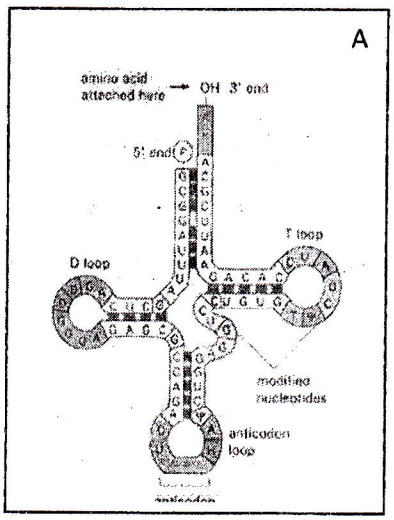
a- Melatonin. b- (*S*)-Triiodothyronine c- (*S*)-Thyroxine. d- Cortisol.

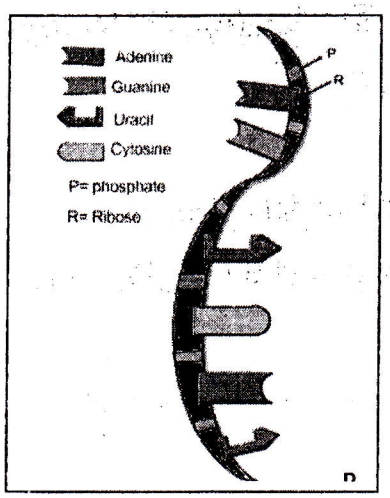
Section (C): (16 Marks)

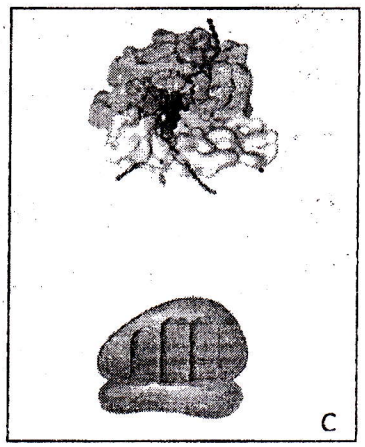
1- Define the mutation and its types giving examples. (2 Marks)

2- What are the three types of RNA and what do and what are their jobs?

(3 Marks)







3- Draw the structures of the following species: (4 Marks)

(a) Adenosine. (b) AMP.

(c) Deoxyguanosine. (e) dCMP.

4- Define the HIV Virus and AIDS treatment. (3 Marks)

5- The following section of DNA is used to build mRNA for a protein: (4 Marks)

— CCC — GAA—TTT—

A. What are the anticodons on the tRNAs ?

B. What is the corresponding mRNA sequence?

C. What is the amino acid order in the peptide?

D. What is the action If the guanidine base is changed to Adenine?

Good Luck

Prof. Dr. Hussein El-Kashef & Dr. Ahmed Abdou Omar

كلية العلوم
جامعة أسيوط

جامعة أسيوط

Chemistry Department

C 441 Analytical Chemistry (II) Final Exam June 2024 ***Time allowed: 2hrs***

Answer the following questions *(50 Marks)*

(A) Choose the correct answer: *(10 Marks)*

1) Biosensors can be distinguished depending upon the mechanism of biochemical interaction between the receptor and the analyte as:
   a) Biocatalytic (metabolic) sensors
   b) Bioaffinity sensors
   c) a,b
2) Biosensors can be subdivided into generations according to the receptor when it is:
   a) entrapped between or bound to membranes, and the combination is fixed on the surface of an appropriate transducer or known chemical sensor.
   b) bound covalently to the transducer's surface, thereby eliminating the need for a semipermeable membrane.
   c) a,b
3) Significance testing is used to:
   a) evaluate the quality of results by estimating the accuracy and precision errors in the experimental data.
   b) to decide whether the difference between the measured values and standard or references values can be attributable to systematic errors.
   c) a,b
4) Chemical sensor is achieved via:
   a) an analyte-specific reaction involving chemical compounds located inside the sensing area.
   b) an analyte-specific reaction involving chemical compounds located outside the sensing area.
   c) a,b
5) Techniques of enzyme immobilization include:
   a) physical or chemical adsorption,
   b) ionic and covalent bonding (perhaps to functionalized transducer surfaces).
   c) a,b

(B) What is the minimum level of analysis that should be tested for indicators of faecal pollution of water? *(10 Marks)*

(C) State the requirements for an HPLC Column Packing Materials. *(10 Marks)*

(D) Discuss in detail how you can separate proteins using polyacrylamide gel electrophoresis. *(10 marks)*

(E) State- in details- the different detectors available for GC with their operation principles and applications. *(10 marks)*

Good Luck

Prof. Nagwa Abo El-Maali

10. Mild hydrolysis of the nucleic acids yield their monomeric units, compounds called ..... .

a) nucleotides	b) nucleosides	c) pentose sugar	d) phosphate groups

11. Separation of amino acid mixture by Electrophoresis depends on the:

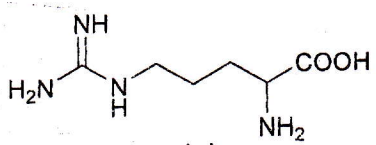
a) isoelectric point	b) end point	c) boiling point	d) melting point

12. Compound lipids containing fatty acids, carbohydrate and sphingosine, but not phosphoric acid nor glycerol.

a) Lipoproteins	b) Glycolipids	c) Phospholipids	d) Sulfolipids

13. Fructose molecule calcified as ..... sugar.

a) D-ketohexose	b) D-aldohexose	c) D-ketopentose	d) D-aldopentose



arginine

14. Arginine classified as .....

a) monoamino monocarboxylic acid	b) diamino monocarboxylic acid
c) triamino monocarboxylic acid	d) tetraamino monocarboxylic acid

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

Prof. Dr. Mona A. Abdel-Rahman

Good Luck

II- Choose the correct answer: (1.5 X 14 = 20 Marks)

1. In Oxidative Rancidity, unsaturated fatty acids of glycerides are oxidized at their ..... .

a) double bonds	b) Ketones	c) Aldehydes	d) Alcohols

2. The number of milligrams of KOH required for the saponification of one gram of oil or fat is called ..... .

a) Acid number	b) Iodine number
c) Richert-Meissl number	d) Saponification number

3. The sucrose molecule is unique among the common disaccharides in having an ..... (head-to-head) .

a) α-1,β-2-glycosidic linkage	b) α-1,β-4-glycosidic linkage
c) α-1,β-5-glycosidic linkage	d) α-1,β-6-glycosidic linkage

4. Iodine number is defined as number of grams of iodine needed for the iodination of ..... . gram/grams of oil or fat.

a) 1	b) 5	c) 100	d) 1000

5. The complementary base sequence for matching strand in the following DNA section:
-G-T-C-C-A-A-T-G-C- is:

a) -G-T-C-C-A-A-T-G-C-	b) -G-A-C-C-T-T-A-C-G-
c) -C-A-G-G-T-T-A-C-G-	d) -C-A-G-G-T-T-A-G-C-

6. Which of the following is of special value in testing the purity of butter ... ...?

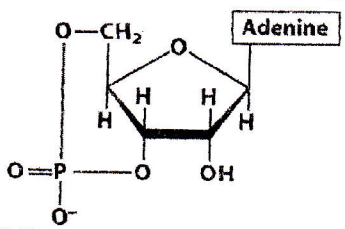
a) Acid number	b) Iodine number
c) Saponification number	d) Richert-Meissl number

7. Choose the major product of the following reaction....

$$\text{Glucose} \xrightarrow[H_2O]{Na/\ Hg} \text{----------}$$

a) sorbitol	b) Lactone	c) gluconic acid	d) ribose

8. Choose the correct name of the following compound:



a) adenosine-1',3'- cyclic monophosphate	b) adenine-1',3'- cyclic monophosphate
c) adenosine-3',5'- cyclic monophosphate	d) adenine-3',5'- cyclic monophosphate

9. In nucleic acids, the nucleotide monomers linked together via a:

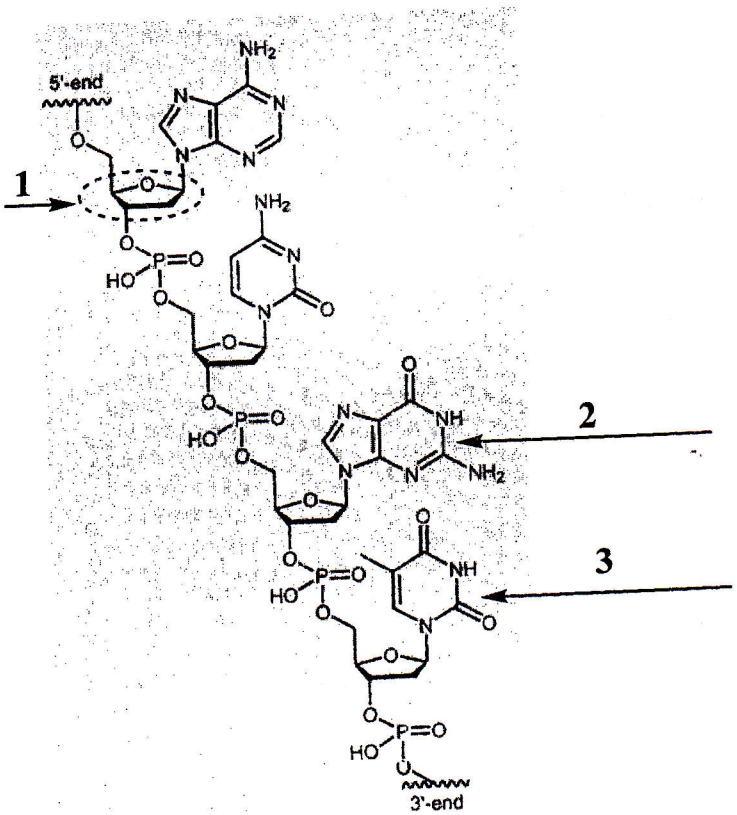
a) Peptide linkage	b) Phosphodiester linkage
c) Glycosidic linkage	d) Ether linkage

Q6- Explain this statement:
It is possible to convert of glucose to mannose through chemical reactions, Show by equation.

Q7- Show by equation the preparation of methionine from *N*-potassium phthalimide.

Q4- Draw the structure of a tripeptide where L-phenyl alanine is first, L- alanine is second, and glycine is third.

Q5- According to this figure answer the following question:



a- This figure is corresponding to part of DNA or RNA molecule, why ?

.....

.....

.....

b- Complete the following data:

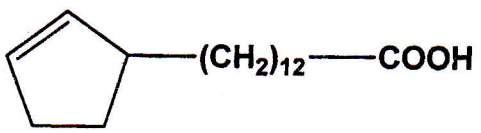
1, is the structure of ..... .

2, is the structure of ..... .

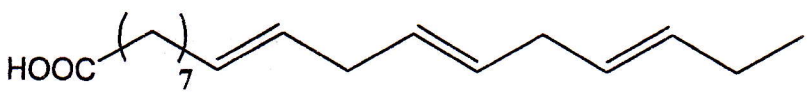
3, is the structure of ..... .

Q2- Explain this statement:
Anomers and Epimers are two different types of diastereoisomers.

Q3- Write the abbreviated chemical formula for the following acids:



Chaulmoogric acid



c- Linolenic acid

Faculty of Science
Chemistry Department

Date: June 2024
Time: 2 Hours

Final Exam of Chemistry of Biomolecules (413 C) for double major Students

(Chemistry of carbohydrates, Amino acids & Proteins, Lipids and nucleic acids)

Note: Support your answer with Chemical equations whenever possible.

Answer on the Following Questions: (50 Marks)

I- Answer on <u>Only Six</u> of the following : (6 X 5 = 30 Marks)

Q1- Draw the chemical structure of **diolein**

1) What is the type of this diglyceride?
2) Calculate the Iodine number for diolein.
3) Calculate the Saponification value for diolein.

[Mol.Wt of diolein = 620.99; A.Wt. of iodine =127; Mol.Wt. KOH =56]

ملحوظة هامة : الأسئلة 6 صفحات

Assiut University

Faculty of Science
Chemistry Department

Final Examination for 4th (Industrial Program) Textile Chemistry
(404 Chem.)

Date: Thursday, 23/05/2024 **Time: 2 hours**

Answer Seven Only from the following Questions: **(50 points)**

1) " Carbon Fibers..... the wonder polymer..... stronger than the steel". Show by equations the steps of production of this polymer.
2) Mention the: Advantages, Disadvantages, Uses and Care for:
   i) Cotton ii) Wool iii) Silk
3) What is the significance of fiber evidence? How can using the fibers to reconstruct crime scenes?
4) Explain what are the main tests for the identification of Fibers? and discuss the properties of Metallic Fibers?
5) What is the main difference between Wool and Cotton fibers? Draw its repeating unit?
6) Explain what you mean by (MAN MADE SYNTHETIC FIBRE), Giving two examples with its properties?
7) How are fabrics made? What are the different characteristics of a fiber, a filament & a fabric?
8) Mention the : Advantages, Disadvantages, Uses and Care for:
   i) Polyesters ii) Acetate iii) Acrylic

Good Luck

Examiner:

Prof. Dr. Kamal Ibrahim Aly

Assiut University
Faculty of Science
Chemistry Department

May 2024
Time: 2 hours
(50 Marks)

Second Semester Examination for Biological Students
Subject: Analytical Chemistry (C- 460)

Answer the Following Questions:---------- (50 Marks)

Answer this question: ..... (12.5 Marks)

A) Choose the correct answer:

1- 0. 1M HCl solution is titrated against an unknown NaOH solution. 10mL of the 0 .1M HCl is required to reach the equivalency point of 10 Ml of NaOH. What is the concentration of the NaOH

A) 0.05M B) 0.1M C) 0 .15M D) 0.2M

2- In an electrolytic cell , metal passes in two ions at

A) Cathode B) Anode C) Salt bridge

3- Find the oxidation state of Cr in $Cr_2O^{-2}_7$

A) +7 B) +5 C) +6 D) -1

4- If a solution has a pOH = 1 , it is also considered

A) Acidic B) Basic C) Neutral D) Cannot be determined

5- The auxiliary electrode in polarography:

A) Dropping mercury electrode B) Mercury pool
C) Graphite electrode D) Rotating platinum electrode

6- Precipitation titration are classified by which mechanism

A) Adsorption B) Color at End Point C) Ion Exchange D) All of The Above

7- Phenolphthalein is all of the following EXCEPT

A) Neutral B) Chemical indicator C) Pink in bases
D) Greenish/yellow in acid

8- Which Titration is known as the Argentemetric titration?

A) Acid base titration B) Diazotization titration
C) Gravimetric titration D) Precipitation titration

B) Put √ or X:

1- Volhard method potassium chromate used as indicator. ( )
2- The acid used in Volhard method is sulphuric acid. ( )
3- $CH_3COONa + CH_3COOH$ is a buffer solution. ( )
4- Mohr method is applicable in basic solution. ( )

Please turn over for the rest of questions

Answer Three only from the following questions:

Q1) Answer the following: ..... (12.5 Marks)

A) Give the reason for the following:

i) The equivalent weight for $KMnO_4$ in acidic medium is 1/5 its molecular weight, while in basic medium the equivalent weight is 1/3 its molecular weight.

ii) Mohr method is applicable in neutral solution.

B) Define the following:

i) Ilkovec equation. Calculate the diffusion current (i_d) for the reduction of $5x10^{-4}M\ Zn^{2+}$, which has diffusion coefficient (D) = $0.72x10^{-5}cm^{-2}$ sec. m =15mg/sec. and t = 4 sec/drop.

ii) Standard hydrogen electrode.

Q2) Answer the following: ..... (12.5 Marks)

A) During the titration of 100 ml of HCl (1N) using NaOH (1N), Calculate the pH

i) Before the titration. ii) After the addition of 50 ml NaOH (1N)

iii) After the addition of 100 ml NaOH (1N) iv) After the addition of 120 ml NaOH (1N)

B) Define the following :

i) Acid-base indicators. ii) Oxidizing agent and reducing agent

iii) Limitation of volumetric precipitation titration reaction.

Q3) Answer the following: ..... (12.5 Marks)

A) Give the reasons for the following:

i) Immiscible liquid nitrobenzene is added in the titration of halide in acidic medium.

ii) Pure nitrogen is passed through the polarographic cell before recording the polarogram.

B) Write on the following:

i) The determination and the applications of equivalent point in potentiometric titration.

ii) Nernst equation. iii) Buffer solution.

Q4) Answer the following: ..... (12.5 Marks)

A) Define the following terms:

i) Molar conductivity, equivalent conductivity and specific conductivity.

ii) Electrochemical cell.

B) Write on the following:

i) Limitation of argentemetric titration reaction.

ii) Half wave potential and factors affected on it.

----------GOOD LUCK----------

Prof. Dr. Azza M.M. Ali

Faculty of Science
Chemistry Department

May 20, 2024
Time : 2 hrs

Petrochemical Industries (409C)

Final Exam. for the 4th level Students (Industrial Chemistry)

Answer on the following Questions: (50 Marks)

Note: Support your answer with chemical equations whenever possible.

I]- Write on Only 5 of the following: (3 x 5 = 15 Marks)

1- The available energy sources.

2- The Contaminants and Purification of Synthesis gas.

3 –Synthesis and Application of Hydrocyanic acid.

4 -The present and future applications of Methanol.

5 – The different types of synthetic detergents.

6- The principal industrial synthesis based on Benzene.

II]- Complete the following equations : (3 x 5 = 15 Marks)

1- $CH_3OH + 0.5\ O_2 \xrightarrow{\text{Catalyst}} ?$

2- $3\ ClCN \xrightarrow{\text{Catalyst}} ?$

3- $CH_4 + Cl_2 \xrightarrow{\text{Catalyst}} ?$

4- $HCOOCH_3 + HCON(CH_3)_2 \xrightarrow{\text{Catalyst}} ?$

5- Toluene + Ethylene $\xrightarrow{\text{Catalys}}$?

ملحوظة هامة : الأسئلة صفحتان

III]- Mark Right (√) or Wrong (X) on the following statements, and Justify your answer : **(2 x 10 = 20 Marks)**

1- Natural gas and coal gasification products are feed stocks in petroleum industries. ( )
2- Brown coal contains higher amount of water and carbon. ( )
3- The production of synthesis gas from natural gas and steam involves only Exothermic process. ( )
4- Autothermal and Allothermal processes are involved in synthesis gas production from oil and steam. ( )
5- Carbon monoxide can be applied with H_2 for production of methanol and higher hydrocarbons. ( )
6- Yeast can synthesize protein from methanol but not from ethanol. ( )
7- Cyanuric chloride is a Dimer of cyanogen chloride. ( )
8- Ag catalysts are not preferred for oxidative dehydrogenation of CH_3OH to HCHO ( )
9- Methanol has high octane number without clean combustion. ( )
10- Surfactants are used in cleaning of closes and have only a hydrophilic end. ( )

Good Luck

Prof. Dr. Aboel Magd A. Abdel Wahab

Assiut university Faculty of science Chemistry department	Final exam Time: 2 hours Unit process in fertilizer industry	Industrial chemistry Fourth level (400 Eng)

First question **(20 degrees)**

A burning furnace in fertilizer factory consumes 10 ton per day sulfur. Temperature of exhausted gases is 1000°C.

- Calculate the excess air ratio.
- Calculate the final composition of exhausted gases.

If, $S_{(s)} + O_{2(g)} = SO_{2(g)}$ $\Delta G^o = -300 + 0.004T$ kJ/mole

Second question **(15 degrees)**

For producing MAP fertilizer needs to react ammonia with phosphoric acid (60 %) at 100°C.

- The amount of water content in the final product.

If, $NH_{3(g)} + H_3PO_{4(l)} = NH_4H_2PO_4$ $\Delta G^o = -103 + 0.4T$ kJ/mole

Third question **(15 degrees)**

A heat exchanger used for cooling sulfur dioxide with rate 100 m^3/hour from 600 to 450°C. The water charges at room temperature and outlet at 99°C.

- Calculate the amount of water.

Note, $C_{p_{N_2}} = 7$ Cal/mole.K, $C_{p_{O_2}} = 7.12$ Cal/mole.K

$C_{p_{H_2O_l}} = 45$ Cal/mole.K, $C_{p_{SO_{2g}}} = 6.5$ Cal/mole.K,

$C_{p_{H_2O_l}} = 45$ Cal/mole.K, $C_{p_{H_2O_g}} = 6.8$ Cal/mole.K,

$\Delta H_{H_2O_{eva}} = 125$ J/mole

$m_S = 32$ g, $m_O = 16$ g, $m_N = 14$ g, $m_H = 1$ g,

Good Luck

كلية العلوم
جامعة أسيوط

جامعة أسيوط

Chemistry Department

Time allowed: 3hrs

C- 444 Selected Topics in Analytical Chemistry Final Exam **May 2024**

Part I: Answer the following questions: *(17 Marks)* ملحوظة: الامتحان ٣ صفحات

(A) Choose the correct answer: *(3 Marks)*

1) If cyclic voltammetry of any antibiotic revealed quasi reversible behavior and change of redox potential upon the interactions with both metal ions and amino acids, this helps guiding in prescribing the medicine that:
   a) they may be used together with the antibiotic.
   b) they should not be used together with the antibiotic.
   c) a,b
2) A film of ruthenium complex synthesized via electropolymerization and then modified onto Pt electrode can be used as a sensor for:
   a) hydrazine
   b) piprazine
   c) amino acids.
3) Since the critical parameter of cancer therapy is the early and precise diagnosis, a cancer biomarker should be:
   a) distinctive,
   b) detectable in patients' biological fluids (blood, urine) but not in healthy individuals.
   c) a,b.

(B) Complete: *(2.5 Marks)*

a) Nanobiomaterials are preferred in targeted drug delivery due to ----------.
b) Nanobiomaterials include various groups such as ----------, ----------, ----------, ----------, ----------.
c) Various imaging techniques are used to separate cancerous cells from normal cells based on ----------, ----------, and ---------- .
d) According to the National Cancer Institute (NCI) definition, a biomarker ---------- .
e) Biomarkers can have different molecular origins such as ----------, ----------, ----------, ----------.

(C) What are the most common biomarkers for breast, prostate, Ovarian, Liver, lung , colon and melanoma cancers? *(3Marks)*

(D) What are the basis for a biosensor device in order to carry out quantitative analysis? *(2.5Marks)*

(E) Bioelectrochemistry is a modern interdisciplinary field, combines biotechnology and electrochemistry. Discuss this statement. *(3Marks)*

(F) Bioelectrochemical Systems (BESs) are used for many purposes. Give examples. *(3Marks)*

Part (II): Answer the following questions: *(33 Marks)*

I) Choose the correct answer: *(17 Marks)*

1. Using a standard curve, if you know the absorbance of an unknown sample, what else can be determined about the unknown?

   (A) The wavelength of maximum absorbance.
   (B) The molecular weight of the sample.
   (C) The concentration of the sample.
   (D) The identity of the sample.

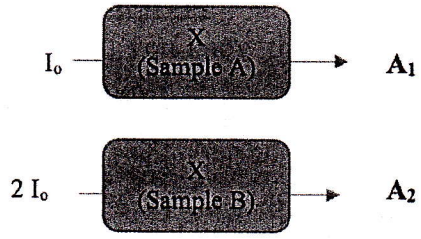
2. Which of the following is a real limitation to Beer's law?

   (A) Fluorescence.
   (B) Analyte Dissociation.
   (C) Polychromatic radiation is used as source.
   (D) Analyte at high concentrations.

3. During relaxation, the electron spin is reversed in .....

   (A) Fluorescence.
   (B) Phosphorescence.
   (C) IR.
   (D) NMR.

4. Two samples each containing the same analyte at equal concentrations are irradiated with different intensities of radiation as shown below. Select the correct statement regarding the absorption shown by the two samples.



   (A) $A_2 = 4A_1$
   (B) $A_2 = 2A_1$
   (C) $A_2 = A_1$
   (D) $A_2 = 1/2A_1$

5. Two compounds A and B have molar absorptivities as 1200 and 15,000 mol $L^{-1}cm^{-1}$ respectively. Which of the following statements is correct regarding them?

   (A) Compound A can be detected at very low concentrations than compound B.
   (B) Compound B can be detected at very low concentrations than compound A.
   (C) Both compounds can be detected at very dilute concentrations.
   (D) Molar absorptivity have no influence on the detection of compounds.

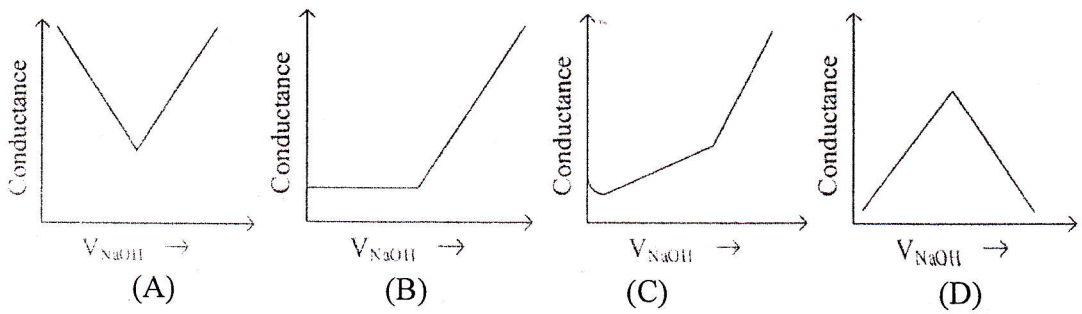
6. Cell constant of an electrolytic cell is .....

   (A) Length * Area.
   (B) Area/length.
   (C) Length/Area.
   (D) None of the above.

7. On dilution, the molar conductance will .....

   (A) Increase.
   (B) Remain the same.
   (C) Decrease.
   (D) None of them.

8. Choose the correct representation of conductometric titration of benzoic acid versus sodium hydroxide.



9. Conductance of a solution does not depend on .....
(A) Number of free ions.
(B) Mobility of ions.
(C) Charge of free ions.
(D) Pressure of the ions.

10. The energy of the emitted radiation in Stoke's fluorescence is .....
(A) Greater than the excitation radiation.
(B) Lower than the excitation radiation.
(C) Equal to the excited radiation.
(D) Sometimes greater and sometimes lower.

11. Fluorescence intensity depends on all of the following except .....
(A) Concentration.
(B) Temperature.
(C) Path length.
(D) Pressure.

12. Collision quenching leads to a loss in energy in .....
(A) Internal Conversion.
(B) Intersystem Crossing.
(C) External Conversion.
(D) All Mentioned Above.

13. Static Quenching is due to.....
(A) Neutralization reaction.
(B) Hydrogenation reaction.
(C) Complex formation reaction.
(D) All of the above.

14. In concentrated solution which layer is absorbed more radiation?
(A) Upper layer.
(B) Lower layer.
(C) A and B.
(D) Middle layer.

15. Phosphorescence is a result of transition of electron from .....
(A) Singlet ground state to singlet exited state.
(B) Lower singlet exited state to singlet ground state.
(C) Triplet exited state to singlet ground state.
(D) Triplet ground state to singlet exited state.

16. Spectrofluorimetric determination of Fluoxetine hydrochloride drug was successfully applied to the analysis of drug in .....
(A) Dosage forms only.
(B) Human plasma only.
(C) Dosage forms and human plasma.
(D) None of them.

17. Spectrophotometric determination of Furosemide drug is based on its oxidation with .....
(A) Acidic potassium permanganate.
(B) Acidic ceric sulphate.
(C) Alkaline ceric sulphate.
(D) Alkaline potassium permanganate.

II) Define each of the following *(4 Marks)*

1. External conversion **2.** Intersystem crossing **3.** Transmittance **4.** Equivalent conductance.

III) Discuss- in brief- each of the following: *(12 Marks)*

1. Spectrophotometric determination of gabapentin drug in pure form and pharmaceutical formulations.
2. Spectrofluorimetric determination of Levocetirizine dihydrochloride drug in bulk and pharmaceutical formulations.
3. Determination of mixture of hydrochloric acid and acetic acid with sodium hydroxide using conductometric titration.

Good Luck

Examiners: *Prof. Nagwa Abo El-Maali*
Dr. Doaa Abdel-rahman

Department of Chemistry, Industrial Chemistry Program
Faculty of Science
Assiut University
Mid-term Exam
May 28, 2024

Industrial Pollution, Its Control and Industrial Safety
Code: **Chem 400**
4rd year
Time: **2 Hours**
Lecturer: **Dr Mosaad Ali**

Important remarks:

- The exam measures ILOs No.: a22, b20, c21, c23, d2 & d9
- No. of Pages: **3** – No. of questions: **4** – Total marks: **50**
- Provide all necessary steps of your answers and assume any missing data

A- Mention the answer to these points: **(10 marks)**

I) The air parameters that should be measured in terms of gaseous pollutants and particulate matter are as follows:

1. .....
2. .....
3. .....

II) Air Quality Modeling, the factors that affect the transport, dilution, and dispersion of air pollutants can be grouped into:

1. .....
2. .....
3. .....
4. .....

III) The samples must accurately reflect the airborne particles in both:

1. .....
2. .....

IV) What is the greenhouse effect?

.....

B- Chose the correct answer: **(10 marks)**

1- Emitted during combustion processes, industrial operations, and transportation activities.

a) Chemicals b) Particulate matter c) Hazardous waste d) All of them

2. The .....is the lowest layer of the atmosphere where most weather phenomena occur.

a) Troposphere b) Tropopause c) Stratosphere d) None

3- Mechanisms or forms of deterioration due to air pollution are:

a) Abrasion b) Deposition c) Chemical attack d) All of them

4- Solid particles of large size and high speed can cause damage by .....

a) Abrasion b) Deposition c) Chemical attack d) All of them

5-Oxidation or reduction can cause direct attack to the material by....., leading to degradation or structural weakening.

a) Abrasion b) Deposition c) Absorption or Chemical reaction d) None

C- True or False equation: (10 marks)

1- The main source of carbon monoxide is complete combustion engines. ( )

2- The large particles greater than 10 μm are likely to be caught in the nose. ( )

3- The TLV-STEL is the maximum concentration to which workers can be exposed for a period up to 15 minutes continuously without suffering. ( )

4- The TLV-C is the concentration that should not be exceeded for a moment. ( )

5- In the subisokentic sample, the stream velocity exceeds the velocity in the probe. ( )

D- Essay equation: (20 marks)

1- A cubic meter sample of air was found to contain 40 μg of SO_2. The maximum temperature and pressure were 25° C and 103.193 kPa when the air sample was taken. What was the SO_2 concentration in ppm?

2- Calculate the minimum size of the particle that will be removed with 100 % efficiency from a settling chamber under the following conditions: Horizontal velocity = 0.3 m/s, Air temperature = 77°C, particle specific gravity = 2, Length = 7.5 m, Height = 1.5 m

3- Determining particle removal efficiency in cyclones An air stream with a flow rate of 7 m3/s is passed thought a cyclone of standard proportions. The diameter of the cyclone is 2.0 m, and the air temperature 77 °C.

(a) Determine the removal efficiency for a particle with a density of 1.5 g/cm^3 and a diameter of 10 μm.

(b) Determine the collection based on the above if a bank of 64 cyclones with diameters of 24 cm are used instead the single large unit.

4- A power plant burns 5.45 ton of coal per hour and discharges the combustion products through a stack of an effective height of 75 m. The coal has 4.2 % **S** and the wind speed at the top of the stack is 6 m/sec. σ_y = 88m σ_z= 53m. Determine the maximum concentration of **SO_2** .

Assiut University

Faculty of Science

Chemistry Department

Surface chemistry and Electrochemistry Examination for 4th Students (Chem.432)(Chemistry Major)

Time :3 h Dat.: 3/6 / 2024

Answer the Following Questions:

Section (I) Surface Chemistry

1) Choose the correct answer of the following **(5 Marks)**

a)- The addition of a catalyst to a reaction provides an alternate mechanism with

(i) Lower activation energy and lower reaction rate
(ii) Lower activation energy and higher reaction rate
(iii) Higher activation energy and lower reaction rate
(iv) Higher activation energy and higher reaction rate

b)- What is not true of characteristics of catalytic reactions?

(i) The catalyst remains unchanged chemical composition at the end of the reaction
(ii) A small quantity of the catalyst
(iii) The action of a catalyst is specific to a large extent
(iv) A catalyst alter the final state of equilibrium

c)- Selectivity of a catalyst will vary with

(i) Pressure (ii) Temperature (iii) Composition (iv) All of them

d)- Which of the following statement is not true

(i) The value of adsorption enthalpy of physical adsorption is less then chemical adsorption
(ii) Physical adsorption occurs due to Van der waals' forces
(iii) Chemical adsorption decreases at high temperature and low pressure
(iv) Physical adsorption is reversible

e). According to Freundlich adsorption isotherm which of the following is correct

(i) $\frac{x}{m}\alpha P^{\circ}$ (ii) $\frac{x}{m}\alpha P^{1}$ (iii) $\frac{x}{m}\alpha P^{\frac{1}{n}}$

(iv) All of the above are correct for different range of pressure

2)- Complete the following sentences: **(5 marks)**

(i) Anion vacancy with trapped electron is .....
(ii) Interstitial atom occupies a position in crystal lattice .....
(iii) The lattice vacancy created when an atom ..... from a normal occupied lattice site
(iv) The turnover number is .....
(v) Sintring is .....physical process leading to a reduction of effective catalytic area

3-Put (✔) or (×) for the following sentences: **(5 marks)**

(i) Adsorption is exothermic process which follows the equation $\Delta H = \Delta G + T\Delta S$. ( )
(ii) The reaction rate is controlled by the availability of charge carries in the catalyst. ( )

(iii) For the industrial catalyst the chemical composition is only the most important factor . ( )
(iv) A space – time yield is the quantity of product formed per unit time per unit volume of reactor.
(v) Paramagnetic results from the presence of a dipole moment ( )

4) Write an account on three only of the following: **(9 Marks)**

(i) The factors are responsible for deactivation of a catalyst
(ii) Prove an empirical law that be used for calculation of the specific heat of solids
(iii) Explain the dual-valence intrinsic semiconductors.
(iv) Compare between homogeneous and heterogeneous catalysis

5)- Answer two only from the following **(9 Marks)**

(i) Prove the Gibbs adsorption equation, from that calculate the average area occupied by each molecule adsorbed on the surface
(ii) Explain the precipitation method used for synthesis of industrial catalysts taking in your consideration all factors affecting their properties.
(iii) Define the catalyst support and what are the important characteristic features of supports

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Section (II) Electrochemical (17 marks)

Answer the following:

Q1: Choose the correct answer (5 marks)

1- The transformations of chemical compounds by the passage of an electric current are called .....

(i) electrolysis (ii) charging (iii) electrochemistry (iv) any of these

2- The chemical equation of oxygen reduction is .....

(i) $O_2 + 4\,e^- \rightarrow 2[O^{-2}]$ (ii) $O_2 + 4H^+ + 4\,e^- \rightarrow 2\,H_2O$ (iii) $O_2 + 2\,H_2O + 4\,e^- \rightarrow 4\,OH^-$ (iv) any of these

3- Example of solid electrolyte is .....

(i) nafion (ii) $AgCl\text{-}CdCl_2$ (iii) $RbAg_4I_5$ (iv) any of these

4-Faradic current at electrode surface is related to .....

(i) redistribution of ions near the electrode surface
(ii) transfer of e- to/from electrode by redox reaction
(iii) charging of electric double layer (iv) any of these

5- One requirement of the electrolyte in a salt bridge is .....

(i) the mobility of the anion of the electrolyte differ from that of cation
(ii) the ions of the electrolyte involve in the electrochemical change
(iii) the ions of the electrolyte react with the species of the cell
(iv) other

6-The electrochemical potential, thermodynamically, is the measure of how .....

(i) free energy change with change of amount of the substance
(ii) enthalpy change with change of amount of the substance
(iii) internal energy change with change of amount of the substance
(iv) any of these

e electrode potential is define as.....

(i) Galvani potential (ii) Galvani potential difference

(iii) Volta potential (iv) Volta potential difference

8- The exchange current of an electrode reaction is the current at ...

(i) anodic polarization (ii) cathodic polarization

(iii) equilibrium in one direction (iv) any of these

9- If the electrode is polarized to a greater potential than at equilibrium, thus .....

(i) η = - ve and reduction take place

(ii) η = - ve and oxidation take place

(iii) η = + ve and oxidation take place

(iv) η = + ve and reduction take place

10- In the polarization cell, the electrode under study is called .....

(i) working electrode (ii) counter electrode

(iii) reference electrode (iv) auxiliary electrode

Q2 Answer only three from the following (4 marks for each one):

1) What is zeta potential; definition, calculation and its applications?

2) Indicate the steps of electrode reaction ($Ag^+ + e^- \rightarrow Ag$) and prove that the electrode potential ($\Delta\phi$) does affect the rate constant of this reaction.

3) What is the electric double layer? Explain its theories.

4) If the hydrogen overvoltage (η_{H2}) for iron in acid solution at applied current density $1x10^{-4}$ A cm^{-2} is 0.15 V, using Tafel equation calculate the exchange current density for hydrogen evolution reaction assuming the cathodic Tafel's slope (b_c) = 0.13 V.

Prof. Dr. Abd El-Aziz A. Said , Prof. Dr. Abou El-Hagag Abd El-Aziz Mohamed

Assiut University

Faculty of Science
Chemistry Department

Final Examination for B.Sc. (Chemistry major)
Applied Organic Chemistry (412 C): (Textiles& Polymers &Material science)

Date: Wednesday, 5/06/2024 Time: 2 hours

Answer the following questions: (50 points)

Answer **Nine Only** from the following:

1) " Carbon Fibers…….. the wonder polymer…… stronger than the steel". Show by equations the steps of production of this polymer.
2) Is it possible to make polyethylene from cyclohexane? If not, say why? then show examples of ring opening polymerization?
3) Compare between the step- and chain- growth polymerization, and also compare, giving reason, between the time needed in polymerization of theses monomers: (Vinyl Chloride, Styrene, MMA)
4) In the living polymerization, show by equations how can we put an ending for the living chain (Carbanion).
5) What is the significance of fiber evidence? How can using the fibers to reconstruct crime scenes ?
6) Mention the: Advantages, Disadvantages, Uses and Care for:
   i) Cotton iv) Acrylic v) Polyesters
7) Discuss with examples the types of Initiators, and what you mean by HIPS ?
8) What is a peptide linkage? Illustrate your answer with 2-amino-ethanoic acid ?
9) How does urea-methanal differ from nylon, Kevlar and Dacron, even though all of them are condensation polymers?
10) Explain by (equations or structures): Types of copolymers- Backbiting- Dianion, Self initiator.

Good Luck

Examiner:

Prof. Dr. Kamal Ibrahim Aly

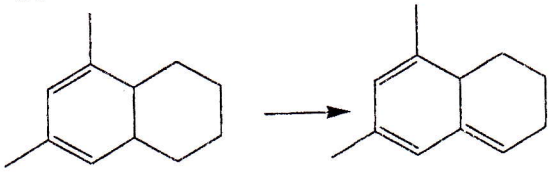
Assiut University Faculty of Science Chemistry Department	Second Semester Final Examination Instrumental Analysis (C-445) Credit Hours System	May 2024 Time: 2 hour

Section (A) (25 Marks)

Answer the following questions:

Part I: choose the correct answer: **(10 points)**

1. Given below two compounds A and B. What happens to the UV-Visible spectra when A is converted into B?



A B

(a) Hypsochromic shift.
(b) Bathochromic shift.
(c) Bathochromic shift and hypochromism.
(d) Hypsochromic shift and hyperchromism.

2. Solid metal samples can be directly analyzed by use of:
(a) Graphite furnace absorption spectroscopy.
(b) Flame atomic absorption spectroscopy.
(c) Both of (a) and (b).
(d) None of the above.

3. Ionization interference in the AAS can be eliminated by addition of:
(a) EDTA (b) Cryolite (c) Lanthanum Chloride (d) Potassium Chloride

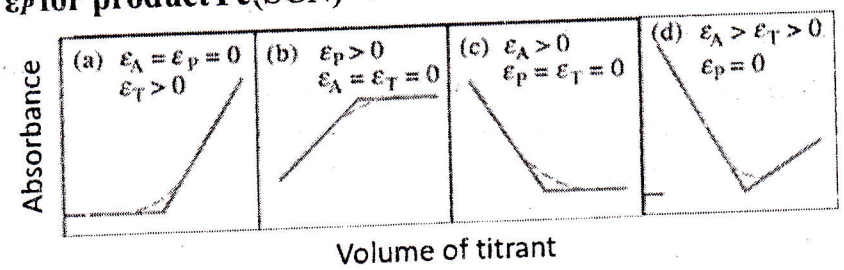
4. Releasing agents are used in atomic absorption spectroscopy to prevent:
(a) Anionic interference (presence of SO_4^{2-} or PO_4^{3-})
(b) Spectral interference.
(c) Physical interference.
(d) Both spectral and physical interferences.

5. In AAS, Hydride generation method is used for detection of:
(a) Organic compounds.
(b) Halogen.
(c) Mercury.
(d) Highly toxic elements such as arsenic, antimony and lead.

6. A device that splits the light source, after passing through the monochromator, into two separate beams-one for the sample and the other for the reference is
(a) Single-beam UV-Vis spectrophotometer.
(b) Double-beam UV-Vis spectrophotometer.
(c) Photoelectric transducer.
(d) Both (a) and (b).

7. Choose the wavenumber corresponding to wavelength of 25×10^{-6} m.
(a) 2500 cm^{-1}
(b) 4000 cm^{-1}
(c) 400 cm^{-1}
(d) 250 cm^{-1}

8. Fe^{+3} (non-absorbing) reacts with thiocyanate ion (SCN^-) (non-absorbing) to form the red complex, $Fe(SCN)^{2+}$. Photometric titration of Fe^{+3} with SCN^- solution to make $Fe(SCN)^{2+}$ would give what titration curve? ε_A for Analyte Fe^{3+}, ε_T for titrant SCN^- and ε_P for product $Fe(SCN)^{2+}$.



9. Which of the following statement is not correct?
   (a) Period is the time required for one cycle to pass a fixed point in space.
   (b) Frequency is the number of cycles which pass a fixed point in space per second.
   (c) Intensity is the distance between two identical adjacent points in a wave.
   (d) Wavenumber is the number of waves per cm in units of cm^{-1}.
10. Which of the following is (are) disadvantages of graphite furnace technique?
   (a) Background absorption effects.
   (b) Analyte sample may be lost at the ashing stage and not completely atomized.
   (c) The precision was poor than the flame method and the analytical range is relatively narrow.
   (d) All the above.

Part II: Problems and Questions (8 points)

1. In AAS, discuss the processes occurring during flame atomization. (2 points)

(a) ---

(b) ---

(c) ---

(d) ---

(e) ---

(f) ---

2. The concentration of Cu^{2+} in a sample is determined by reacting it with the ligand cuprizone and measuring its absorbance at 606 nm in a 1.00- cm cell. When a 5.00-mL sample is treated with cuprizone and diluted to 10.00 mL, the resulting solution has an absorbance of 0.118. A second 5.00-mL sample is mixed with 1.00 mL of a 20.00 mg/L standard of Cu^{2+}, treated with cuprizone and diluted to 10.00 mL, giving an absorbance of 0.162. calculate the mg Cu^{2+}/L in the sample. (3 points)

3. A solution containing the complex formed between Bi(III) and thiourea has a molar absorptivity of 9.32×10^3 L mol^{-1} cm^{-1} at 470 nm. (3 points)

(a) What is the absorbance of a 6.24×10^{-5} M solution of the complex at 470 nm in a 1.00 cm cell?

(b) What is the percent transmittance of the solution described in (a)?

(c) What is the molar concentration of the complex in a solution that has the absorbance described in (a) when measured at 470 nm in a 5.00 cm cell?

Part III: Enter in the appropriate box the expressions you would select to define each of the phenomena Labeled [1]-[7] inclusive. **(7 points)**

Expression	Phenomena
Zeeman effect	[1] In that the absorbance (A) is directly proportional to the concentration of the absorbing species (c) and the path length (b) of the absorbing medium.
Photoelectric transducer	[2] The most common source for atomic absorption measurements. It emits the specific resonance lines of the atoms in question.
Standard addition method	[3] A device used for converting solution into fine spray or droplets in AAS.
Beer's law	[4] An atomization method used only to the determination of mercury.
Nebulizer	[5] A device that measures the difference between the transmitted light through the sample (I) *vs.* the incident light (I_0) and sends this information to the recorder.
Cold vapor technique	[6] A method is used for the determination of analytes in a complex matrix where interferences for the analyte will occur. Such as blood, sediment, human serum, etc.
Hollow cathode lamp	[7] It is used for background correction in AAS by place flame polarized light through sample in magnetic field get absorbance (atom + molecule) or absorbance (molecule) depending on how light is polarized.

[1]	
[2]	
[3]	
[4]	
[5]	
[6]	
[7]	

Section (B) (25 Marks)

Question 1: Choose the Correct Answer: (12 Marks)

1- The modes of mass transport in voltammetric methods are .....
(a) diffusion and migration. (b) diffusion and convection
(c) migration and convection (d) diffusion, migration and convection

2- The dissolved oxygen present in experimental solution in acidic medium gets easily reduced at DME to form ....., in the first step.
(a) H_2O (b) H_2O_2 (c) Gelatin (d) $O_2 + 2H^+$

3- Which of the following influences the rate of the electrochemical reaction?
(a) Mass transport (b) Kinetics of electron transfer
(c) A & B (d) None of these

4- A sample contains Cd^{2+} and Zn^{2+} ions at different concentrations. The two ions can be distinguished in polarography by.....
(a) Half wave potentials (b) Diffusion currents
(c) Limiting current (d) Faradic current

5- Widely used supporting electrolytes in voltammetric methods are .....
(a) buffer solutions (b) potassium salts
(c) mineral acids (d) All of these

6- Amperometry is the measurement of ..... at a constant voltage applied to the dropping mercury electrode.
(a) Current (b) Time (c) Voltage (d) None of these

7- Which of the following is (are) solid electrodes based on carbon?
(a) Carbon paste electrode (b) Graphite epoxy electrode
(c) Glassy carbon electrode (d) All of these

8- Currents other than faradaic may also exist in an electrochemical cell that are unrelated to any redox reaction. These currents are called .....
(a) Capacitive current (b) Charging current
(c) Non-faradic current (d) All of the these

9- Voltammetry is based on the measurement of ..... as function of applied potential.
(a) conductance (b) time (c) current (d) concentration

10- In polarography half wave potential and diffusion current is fundamental basis of ..... and ..... analysis, respectively.
(a) Quantitative , qualitative (b) Qualitative , quantitative
(c) Current , voltage (d) Functional group , element

11- The supporting electrolyte is needed to .....
(a) increase the resistance of the solution (b) eliminate electromigration effects
(c) maintain a constant ionic strength (d) both B and C

12- ..... electrode is used in polarography to prevent the current passing through reference electrode.
(a) Auxiliary (b) Working (c) Calomel (d) Ag/AgCl electrode

1	2	3	4	5	6	7	8	9	10	11	12

Question 2: Write on the principle of electrochemical biosensor (Give an example).

(3 Marks)

Question 3: The oxidation of dopamine (DA) is a $2e^-$ process. A cyclic voltammetric anodic peak current (I_p) of 2.2 µA is observed for 0.4 mM solution of DA in acetate buffer at glassy carbon electrode of 2.6 mm^2 with a scan rate (v) of 25 mV/s. What will I_p be for v =100 mV/s and 1.2 mM DA? **(5 Marks)**

Question 4: Write on the following: (5 Marks)

(a) Advantages of stripping voltammetry:

(b) A lead solution of unknown concentration yields a diffusion current of 1.00 µA. Then, to 10.00 mL of the unknown solution is added 0.50 mL of a standard solution of lead whose concentration is 0.04 M. The diffusion current with the spiked solution is 1.50 µA. Calculate the lead concentration of the unknown solution.

GOOD LUCK

Examiners: Prof. Dr. M.S. Ibrahim

Prof. Dr. Hossieny Ibrahim

جامعـــة أسيـــوط
كليـــة الصيدلـــة
الفصل الدراسى الثانى ٢٠٢٣ / ٢٠٢٤ م

الخميس : ٣٠ ـ ٥ ـ ٢٠٢٤ م
الزمن : (ساعتـــان)
Total Mark : (50 Scores)

امتحـــان مقرر" Cosmetics and Perfumes "
لطلاب كليـــة العلوم - المستوى الرابع (414 Chem)

I. Give the scientific expression for the following sentences : (24 Scores)

1- The materials used to remove skin cells or plaque from teeth .
( )

2- The agents are known as sequestrants and help improve the stability of cosmetic products.
( )

3- The substances commonly used in skin toners and used in aftershave lotions .
( )

4- Chemical materials are functional ingredients and usually joined in skin whitening or skin peel products in presence of low pH
( )

5- Functional ingredients that form a continuous film to hold hair in its place .
( )

6- The agents used to block the evaporation of water from the surface of the skin .
( )

7- The conditioning agents used to retard the moisture loss by holding water within the surface layers of the skin .
( )

8- The agents used to protect the skin from absorbing UV light .
( )

9- The agents used to mix the oil and water phases in an emulsion.
( )

10- The ingredients used to thickening the water soluble components of personal care formulation .
( )

11- The method used steam distillation for obtaining the oils from plants is called :
( )

12- The method used for soaking plant material in vegetable oil , heated and strained is called :

( )

13- The extraction of oils from fruits by cold method is called :

( )

14- Fragrances that are dominated by a scent from one particular flower .

( )

15- The name of the note that containing the common fragrances used in perfumes that include the Sandalwood , Amber and Musk.

( )

16- The name of method used the flower parts dissolved in benzene or petrolatum to retain the fragrance of the flower .

( )

II. Choose and Circle the correct answer : (26 scores)

1- The following antioxidants extracted from plant used to reduce oxidation or rancidity except one :

A) Green Tea B) Chamomile

C) Rosemary D) Silica

2- The following material used as abrasives to remove skin cells is :

A) Citric acid B) Oat

C) Iron Oxide D) Methyl Parabin

3- The used superficial colorant agent in personal care product is :

A) Acid green I B) Chromium oxide green

C) Basic Blue 40 D) Orange Extract

4- The following chemical exfoliants found in skin whitening or skin peel products except one :

A) Glycolic acid B) Benzoic acid

C) Lactic acid D) Silica

5- Common ingredient used in hair fixative to hold style in its place is :

A) Acrylic acid B) Glycol stearate

C) Stearic acid D) Propylene glycol stearate

6- The following pH adjuster support ingredients to raise the pH except one :

A) Potassium Hydroxide B) Lactic acid

C) Sodium Hydroxide D) Triethanolamine

7- The following material used as preservative prevent or retard microbial growth is :

A) Sodium Chloride B) Propylene glycol

C) Methyl Paraben D) PEG

8- ..... are use to impart softness to the skin by remaining on or in the upper layers of the skin .

A) Humectants
B) Exfoliants
C) Emollients
D) Fragrances

9- ..... are added to shampoos and shower gels to make them appear pearlescent and creamy .

A) Opacifying agents
B) Hair condtioning agents
C) Hair Fixative agents
D) Chelating agents

10- Inorganic physical sunscreen agents which acting by reflecting UV light and used as functional ingredients except one :

A) Titanium dioxide
B) Zinc Oxide
C) A and B
D) Benzophenone

11- Perfumes can be classified into modern classes except one :

A) Green
B) Aquatic
C) Single floral
D) Fruity

12- The trade name of Aquatic modern perfume is :

A) Chypre Type
B) Christian Dior's
C) Grass Leaf
D) Ginestet Botrytis

13- Fragrance used in perfume can extracted from animal source is :

A) Musk
B) Roots
C) Linalool
D) Fruits

14- Fragrance used in perfume can be extracted from synthetic source is :

A) Resin
B) Honey Comb
C) Coumarin
D) Seeds

15- Perfumes can be manufactured by the following steps :

A) Extraction – Collection - Blending
B) Collection – Extraction – Blending
C) Extraction – Aging – Collection
D) Blending – Collection – Aging

16- The Extraction of oils from plants , the solvent used in dissolving the fragrance is :

A) Vegetable Oil
B) Alcohol
C) Essential Oil
D) Chloroform

17- Enfleurage method for extraction of fragrance is called :

A) Cold Pressing
B) Maceration
C) Pomade
D) Solvent Method

18- Fixative used in natural or synthetic substances in perfumes to reduce the evaporation rate is :

A) Benzyl Alcohol
B) geraniol
C) Limonene
D) Citral

19- The percentage of ethanol and water used to dissolve oil in perfumes is :

A) 90% ethanol and 10% H_2O
B) 80% ethanol and 20% H_2O
C) 95% ethanol and 5% H_2O
D) 98% ethanol and 2% H_2O

20- The following Controversial ingredients used in cosmetics except one :

A) Dioxanes
B) Alcohol
C) Formaldehyde
D) Parabens

21- Perfumes are classified into five groups on the basis of concentration of fragrance.

A) True
B) False

22- Eau de cologne have a concentration of fragrance from 5 – 15 %

A) True
B) False

23 - Eau de fraiches have a concentration of fragrance (1 – 3 %) and last up to 3 hours .

A) True
B) False

24 - Perfumes can further be classified into traditional and modern classes .

A) True
B) False

25 – Modern classes of perfumes containing the fragrance of Amber .

A) True
B) False

26 – Fixative substances used to reduce the evaporation rate of perfumes for example benzyl alcohol .

A) True
B) False

Good Luck .....

Date: 9/6/2024
Time Allowed: 2 hours

Please carefully read the instructions for each question. The exam consists of 6 pages.

Question No. 1: Indicate whether the sentence is true or false. Write the question number and your answer (either 'true' or 'false') on the answer paper, *Solve all questions* (15marks)

1. In general, concrete can be considered as porous material.
2. Concrete is made with several types of cement and may contain pozzolan & admixtures.
3. Continuous curing of concrete is increasing concrete compressive strength.
4. Decreasing water cement ratio is a main factor to have both High Strength Concrete & High-Performance Concrete.
5. Consistency is one of the main properties for hardened concrete.
6. Increasing Water cement ratio cause increasing in workability.
7. Compressive Strength of concrete is commonly considered to be its most valuable property.
8. Fresh concrete has the ability to take the form of any desired shape.
9. Using Pozzolanic materials works in decreasing concrete Permeability.
10. Size of aggregate isn't one of the Factors that affecting on workability.
11. Concrete is protecting steel reinforcement from corrosion by forming passive protection layer on steel bars.
12. Compacting of concrete plays important role in increasing concrete compressive strength.
13. In order to avoid segregation, the concrete should not be thrown from a height.
14. Around 50% of drying shrinkage take place in the first year.
15. Mechanical Concrete mixing is done only in ready mix plants.
16. High compressive strength concrete can't reach 1000 kg/cm^2
17. Absorption is not depending on Permeability.
18. The quality of concrete depends on many factors such as cement quality.
19. Shape and size of concrete elements are affecting on drying shrinkage.
20. In High strength concrete, the failure occurred in the cement paste.
21. Using clean aggregate is an important factor while mixing concrete.
22. Silica fume is a byproduct and can be described as a Pozzolanic Materials.
23. Fire resistance in Concrete is higher than Steel.
24. The separation of water or water-cement mixture from the freshly mixed concrete is known as bleeding.
25. In general, building collapse may be caused by concrete creep only.
26. Avoiding segregation and good compaction of concrete are important parameters in increasing Permeability.

27. Factors that affect consistency: mainly water percentage, cement fineness, aggregate size, weather & admixtures.
28. If Cement / Aggregate ratio is 1:4 so it is rich concrete mix while if the ratio reached 1:8 the mix become so poor.
29. Strength usually gives an overall picture of the quality of concrete because it is directly related to the structure of cement paste.
30. Mineral Admixtures are used to improve the workability of fresh concrete and the durability of hardened concrete.

Question No. 2: Multiple Choice, choose the appropriate answer. Write the question number and your answer (A, B, C, D or E) on the answer paper, *Solve all questions* (10 mark).

1. **Concrete mainly consists of**
   A. cement paste
   B. aggregates
   C. air
   D. admixtures
   E. all the above.
2. **For a good concrete:**
   A. aggregates should be hard and durable
   B. cement should be sufficient to produce the required strength
   C. water should be free from organic materials
   D. mixing of ingredients should be done thoroughly so as to produce homogeneity
   E. all the above.
3. **Since adding water, the Concrete passes with the following main phases:**
   A. Fresh Concrete + Green Concrete
   B. Hardened Concrete + Fresh Concrete
   C. Preparation phase + Green Concrete
   D. Fresh Concrete + Green Concrete + Hardened Concrete
   E. None of these
4. **pH value of concrete is ranging between..... .**
   A. 9 to 11
   B. 12 to 14
   C. 15 to 16
   D. 16 to 19
   E. None of these

5. **If a concrete element (length =1m) is exposed to a constant stress 300Kg/cm^2) this causes a deformation = ... due to creep.**
   A. 3 mm
   B. 1 mm
   C. 30 mm
   D. 10 mm
   E. None of these
6. **Slump shape may be:**
   A. Flow
   B. Shear
   C. True
   D. All the above
   E. None of these
7. **Concrete grade 250 Kg/cm^2 includes around ..... of cement:**
   A. 250 kg
   B. 150 kg
   C. 300 g
   D. 3 bags
   E. 350 kg
8. **The heat of hydration of cement is dependent on:**
   A. Composition of cement
   B. Fineness of cement
   C. Temperature
   D. All of the above
   E. None of these
9. **High strength concrete may has grade = kg/cm^2**
   A.150
   B.125
   C.275
   D.250
   E.700
10. **Pick up the correct statement from the following:**
    A. Segregation is necessary for a workable concrete
    B. Consistency does not affect the workability of concrete
    C. If the slump increases, workability decreases

D. If the concrete mix is dry, the slump is maximum

E. None of these.

11. Permissible compressive strength of M 450 concrete grade is

A. 100 kg/cm^2

B. 150 kg/cm^2

C. 200 kg/cm^2

D. 350 kg/cm^2

E. 450 kg/cm^2

12. Loss of water can cause _____ types of shrinkage.

A. 3

B. 4

C. 5

D. 6

E. 2

13. Admixtures which cause early setting, and hardening of concrete are called

A. Workability admixtures

B. Accelerators

C. Retarders

D. Air entraining agents

E. Shrinkage reducers

14. Water required per 8 bags of cement, is

A. 175 liter

B. 200 liter

C. 350 liter

D. 7 kg

E. 25 kg

15. Specified compressive strength of concrete is obtained from cube tests at the end of

A. 2 days

B. 7 days

C. 14 days

D. 7 hours

E. 28 days.

16. Proper proportioning of concrete, ensures

A. desired strength and workability

B. desired durability

C. water tightness of the structure
D. all the above.
E. none of these

17. Curing a concrete for long period ensures better

A. volume stability
B. strength
C. water resistance
D. durability
E. all the above.

18. Pick up the correct statement from the following:

A. Water cement paste hardens due to hydration
B. During hardening cement binds the aggregates together
C. Cement provides strength & durability to the concrete
D. All the above.
E. none of these

19. Some of Concrete types are

A. Plan & Reinforced concrete
B. Colored & prestressed concrete
C. Light & heavy weight concrete
D. Prestressed & precast concrete
E. All of the above

20. Shear strength is one of ..... concrete properties.

A. Hardened
B. Green
C. Fresh
D. None of these
E. All the above

Question no. 3: Essay (15 mark)

a. Write short notes on any THREE points

1. Creep (Illustrative drawings are necessary)
2. Non-Destructive testing of concrete (including definition, three applications & state two examples).
3. Concrete admixtures and its conditions, mention 5 reasons for using admixtures in concrete, write briefly about the accelerators and retarders
4. Concrete resistance to different chemical attack (state 4 types at least)

b. Differentiate between any <u>THREE points</u>:

1. Concrete grades 250 Kg/cm^2 & 900 Kg/cm^2
2. Permeability & Absorption
3. Compressive & tensile Strength
4. Fresh & Hardened concrete

<u>Question No. 4:</u> Problem solving (10 marks)

Design the concrete mix by weight & volume using absolute volume method, considering the below information:

- The fresh concrete consistency is Plastic
- Consider water cement ratio = 50%
- The needed compressive strength after 28 days = 300kg/cm^2
- The passed percentage of aggregate through sieve 3/16 = 40%
- Specific weight of cement = 3.15
- Specific weight of aggregate (sand & gravel) = 2.65
- Volumetric weight of aggregate (sand & gravel) = 1700 Kg/cm^2

With my best wishes