الفقه المالكي

Assiut University
Faculty of Science
Chemistry Department

Summer Course2016-2017
Time:2 hrs

Instrumental Method of Analysis (C- 445)

Answer **Four Only** of the following questions : (12.5 marks for each)

1-a-i- Write an ILkovic equation with driving diffusion current constant.

ii- Define half wave potential , then write the advantages of the dropping mercury electrode (DME).

b-i- Draw spectral shifts of the absorption spectrum.

ii- Calculate the concentration in mole /L of a solution of Tryptophan in 0.1 N HCL giving an absorbance 0.613 in cell 1 cm,£=5432 $L.mol^{-1}\ cm^{-1}$.

2-a- Define the equivalent conductance. The conductometric titration of a strong acid against a weak base gives L-shap.Explain.

b- Define R_f in planer chromatography , then draw gas chromatograph.

3-a- Write the amperometric titration of an active polarographic substance against an active one.

b- Draw the instrument of each of flame emission and atomic absorption.

4-a-i- Write the advantages of coulometric titration.

ii- 0.0231 g of an organic acid is dissolved in a mixture of alcohol and water is titrated against OH^- , which produced by 0.0427 Amp. in 402 seconds calculate the equivalent weight of this acid.

b- Write the preparation of a strong acidic resin and its application to remove Ca^{2+} from hard water.

5-a- Discuss the programmed temperature chromatogram.

b-i- Define concentration distribution ratio and mass distribution ratio.

ii- Calculate E% of 1.0 g of a solute in aqueous medium using 30 ml organic solvent (D_c=10 and n=3)

c- Write on the diffraction grating.

Good Luck

Prof.Dr.A.H.Ibrahim

Assiut University
Faculty of Science

CS463- Data Transmission
(All levels)
Final Exam (Summer 2017)

Time Allowed: 2 H

Answer all questions.

Question 1 (15 points)

Copy the number of each sentence to your answer notebook and mark it with " ✔ " for the correct sentence and " ✘ " for the incorrect one.

1. The network layer is concerned with the exchange of data between an end system (server, workstation, etc.) and the network to which it is attached.
2. The physical layer is concerned with specifying the characteristics of the transmission medium, the nature of the signals, the data rate, and related matters.
3. Attenuation over a transmission medium increases with the increase of frequency
4. The bigger the area of a dish antenna the bigger the gain.
5. An audio signal is an example of digital signals.
6. The smaller the bandwidth of a channel the bigger the channel capacity.
7. All inputs of a computer keyboard represent an example of an analog signal.
8. Digital signal can be transmitted for longer distance than analog signal.
9. As the SNR increases, as the channel capacity decreases according to Shannon.
10. FDM means dividing the frequency bandwidth of a transmission medium on multiple-users.

Question 2 (12 points)

1. For n devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topologies?
2. What is the difference between the Modem and the Codec devices?
3. An analog signal (voice) of bandwidth of 3100 Hz is to be transmitted as a sequence of bits, if it is sampled at the Nyquest rate (frequency) and each signal level is represented by 4-bits what is the bit rate.

Question 3 (12 points)

1. What is the job of an equalizer?
2. What are impairments sources in data transmission systems?
3. In a digital data transmission system $E_b/N_0 = 8.4$ dB is required for a bit error rate of (one bit error out of every 10,000). If the effective noise temperature is 290°K (room temperature) and the data rate is 2400 bps, what received signal power level is required? (Hint: Boltzmann's constant = $1.38 * 10^{-23}$ J/K). Find also the minimum $\frac{E_b}{N_0}$ required to achieve a spectral efficiency of 6 bps/Hz.

Question 4 (11 points)

1. A sequence of alternating 1s and 0s is transmitted as a square wave and the data rate is 4 Mbps. Find the period of the square wave signal. If the bandwidth assumed for the transmission of this wave allows only the first three (3) harmonics what is then the assumed bandwidth?
2. What is the channel capacity for a telephone channel with a 3000-Hz bandwidth and a signal-to-noise ratio of 3 dB, where the noise is white thermal noise?

Good Luck

Assiut University

Faculty of Science
Chemistry Department

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

Date: Saturday , 20/08/2017 **Time: 2 hours.**

Answer the following Two Sections:

Section A: (Textiles and Dyes Chemistry). **(25 points)**

Answer the following questions:

1) Discuss the physical properties of fibers related to durability.
2) Write on the reaction mechanism of azodye s industry (diazotization , coupling and salting out)

Section B : (Polymers &Material Science) **(25 Points)**

Answer the following questions:

1) What is a peptide linkage? Illustrate your answer with 2-amino-ethanoic acid ?
2) What are the three main types of degradable plastics? Why are they degradable?
3) Why would a hole appear when a dilute alkali is spilt on a fabric made of polyester?
4) There is another kind of nylon called nylon-6. What is the structure of the monomer of nylon-6?
5) Explain the term "vulcanization of rubber". What are the differences between natural rubber and vulcanized rubber?

Good Luck

Examiners:

Prof. Dr. Saud A Metwally& Prof. Dr. Kamal I Aly

Assiut University

Surface Chemistry & Electrochemistry for 4th students (Chem.432)
(Chemistry Major)

Faculty of Science
Chemistry Department

Time: 3 h.
Date : August 2017

Answer the Following Questions:

Section (1) (Surface Chemistry) (33 Marks)

1. Put (√) or (X) for the following sentences: (3 Marks)

(i) Adsorption of a gas on solid is an exothermic process. ( )

(ii) The number of molecules reacted per unit site per unit volume is a selectivity. ( )

(iii) Isomorphism is a compound with two different crystal forms. ( )

(iv) The repeated motion many times in the crystals responsible for the plasticity of crystals. ( )

(v) The amount of gas adsorbed on solid increases with decreasing of gas pressure. ( )

(vi) The maximum rate of reaction is obtained when the bond between the adsorbed complex and the catalyst surface is too strong. ( )

2. Write short notes on <u>two</u> only of the following (10 Marks)

(i) Deactivation of catalysts.

(ii) Influence of promoters on the texture and structure of a catalyst.

(iii) Non-stoichiometry of solid compounds.

3. Derive an empirical law that be used for calculating the average area occupied by each molecule adsorbed on the surface in oil/water system. (5 Marks)

4. Apply the V_a-t method for calculating of S_t and porosity of solid catalyst. (5 Marks)

5. Explain the precipitation method used for synthesis of solid catalysts taking in your consideration all the precipitation conditions. (5 Marks)

6. Discuss the electrical conductivity of semiconductors. (5 Marks)

من فضلك اقلب الصفحة

Section (2)(Electrochemistry) (17 Marks)

Answer only Four questions from the following:

1) **Write short note about: Cost (direct and indirect) of corrosion – two methods for corrosion protection.**

2) **Complete the following:**

   i) **The overall chemical reaction taking place in an electrochemical cell is made up of two independent .....reactions.**

   ii) **The polarization cell consists of three electrodes:....., ... and .....**

   iii) **Fermi level is define as .....**

3) **The exchange current density for the evolution of hydrogen at platinum is 3.0×10^3 mA m^{-2}. Using th polarization resistance equation calculate the current density at 298 K for an overpotential 5 mV? (R = 8.314 J K^{-1} mol^{-1}, F = 96485 C mol^{-1})**

4) **Using Debye – Huckel Limiting Law calculate the value of $\gamma_\pm$ in 5×10^{-3} m solution of KCl, where A = 0.509 / (mol $kg^{-1})^{1/2}$ for an aqueous solution at 25 °C.**

5) **Define the following abbreviations: SHE, EDL, OHP, SCE.**

Good Luck

Prof. Dr. Abd El-Aziz A. Said, Prof. Dr. Abo El-Hagag Abd El-Aziz

Assiut University
Faculty of Science
Chemistry Department

Summer Course 2016-2017
Time:2 hrs

Analytical Chemistry for Biology Students(C- 460)

Answer **Four Only** of the following questions: (12.5 marks for each)

1-a- pH , Solvent , Temperature and dilution are factors affecting absorption spectrum. Explain.

b- Define buffer solution. A buffer solution containing 0.5 M NH_4OH and 0.2 M NH_4Cl. Calculate the pH of this buffer(K_b of NH_4OH=4.76).

2-a- Write the methods of detection of the end point in potentiometric titration.

b- Write on: Ilkovic equation – Half wave potentical , photomultiplier tube- Nernest equation- R_F.

3-a- During titration of 100 ml. 0.1 M NaCl against 0.1 M $AgNO_3$. Calculate P^{CL} values during adding 0.00 , 50 , 99 , 100 and 110 ml of $AgNO_3$(K_{sp} of AgCl=$1x10^{-10}$)

b- Write on the programmed temperature chromatogram.

4-a- Define each of concentration distribution ratio and mass distribution ratio , then write the relation between them .

b- Balance the following equation in acidic medium.

$$Cr_2O_7^{2-} + Fe^{2+} \longrightarrow Cr^{3+} + Fe^{3+}$$

5-a- Give reasons for:-

i- Conductometric titration of a weak acid against a strong base give anti-L shap.

ii- Zn /$ZnSO_4$ // Cu / $CuSO_4$ is reversible cell.

b- Write the preparation of strong acidic resin and its application to remove Ca^{2+} from hard water.

Good Luck

Prof.Dr.A.H.Ibrahim

Assiut University
Faculty of Science
Chemistry Department

Final Examination in Petroleum & Petrochemicals (451C) for the 4th Level
(Summer Term)

Date: Saturday, 26/08/2017 **Time: 2 hours.**

Answer the following questions: **(50 Mark)**

Question 1.

a) Explain the Doctor's sweetening process ?
b) Discuss the Isomerization mechanism (*n*-Alkanes into isoparaffins).
c) Write short notes on :-Non- Hydrocarbons in crude Petroleum.

Question 2.

a) What you mean by Octane number & Oxygenate additives.
b) Explain the Propane deasphalting.
c) Discuss the Catalytic hydrodesulfurization process.

Question 3.

a) Discuss the effect of sulfur compounds upon the Gasoline Product?
b) Describe the Solvent Extraction methods for sulphur reaction.
c) Explain the Carbide Theory for origin of the Petroleum and its defects.

Question 4.

a) Discuss the following terms:
Aniline Point Additives Freezing Point of Aviation Fuels
b) Describe in details the thermal conversion processes (Visbreaking & Delayed coking) ?
c) Starting from the following building blocks , discuss what are the petrochemicals can be produced from it :
   a) Methane
   b) Propene.
   c) Butadiene

Good Luck
Examiner
Prof. Dr. Kamal Ibrahim Aly

Assiut University
Faculty of Science
Chemistry Department

Final Examination in Chromatography and Petroleum (411C) for the 4th Level (Chemistry Major) (Summer Term)

Date: Sunday, 27/08/2017 **Time: 3 hours.**

Answer the following Two sections: **(50 Mark)**

Section A (Chromatography)

Write on Only Four from the following questions:

1. Classification of chromatography according to the development procedure.
2. Adsorpents, advantages, disadvantages and methods of locations of thin layer chromatography (TLC).
3. Ion exchange organic resins, gel chromatography and flash chromatography.
4. Instrumentation, advantages and applications of gas chromatography (GC).
5. Instrumentation of high performance open liquid chromatography (HPLC) and capillary zone electrophoresis.

Section B (Petroleum and Petrochemicals)

Answer the following questions:

Question 1:

a) What is the definition of API gravity? Does a lighter crude oil have a lower or higher value
b) Explain the Doctor's sweetening process equations.
c) Discuss the Isomerization mechanism (*n*-Alkanes into isoparaffins).

Question 2:

a) What you mean by Octane number & Oxygenate additives.
b) Explain the Propane deasphalting.
c) Discuss the Catalytic hydrodesulfurization process.

Question 3:

a) Discuss the effect of sulfur compounds upon the Gasoline Product?
b) Show by chemical structures the composition of Heteroatom in the crude Petroleum.
c) Explain the Carbide Theory for origin of the Petroleum and its defects.

Question 4:

a) Describe in details the thermal conversion processes (Visbreaking & Delayed coking)?
b) Starting from the following building blocks, discuss what are the petrochemicals can be produced from it :
   i) Ethylene
   ii) Propylene.
   iii) Butadiene

Good Luck

Examiners:

Prof Dr. Mohamed T Ismail & Prof. Dr. Kamal Ibrahim Aly

Assiut University
Faculty of Science
Chemistry Department

Summer Term 2017
Time allowed: 2 hours

Final Examination of Chemistry of Biomolecules (C 413) for forth-level Students

Answer **Only Five** of the following questions:

Question No 1:

(a) Draw the structure of :
Sucrose – Sphingosine – Vitamin D_2- Cholesterol-
Linoleic acid- Palmitic acid.

(b) Show by equations the synthesis of :
Aspartic acid –Ascorbic acid

Question No 2:

Write short notes on:

(a) Ninhydrin test for amino acids
(b) Types of peptides
(c) Importance of lipids

Question No 3:

Conduct a comparison between DNA and RNA

Question No 4:

Draw the structure of triolein

(a) What is the type of this triglyceride?
(b) Calculate the Iodine number for triolein
(c) Calculate the Saponification value for triolein
[Mol.Wt of triolein = 884; A.Wt.of iodine =127; Mol.Wt. KOH =56]

Question No 5:

Rancidity is a physico-chemical change in the natural properties of the fat and oils.
Discuss each of the following:

(a) Types of Rancidity
(b) Avoidance of Rancidity
(c) Hazards of Rancid Fats

Question No 6:

Show how can you do the following transformations:

(a) Fructose to glucose
(b) Glucose to arabinose

GOOK LUCK

امتحان نهاية الفصل الدراسي الصيفي :جميع المستويات المقرر: أخلاقيات المهنة والسلامة المهنية رقم المقرر ورمزه: F300	كلية العلوم	الزمن: ساعتان ٢٤ أغسطس ٢٠١٧ الاجابة في نفس الورقة

السؤال الأول: ضع علامة ✓ أو X امام العبارات التالية : **(١٠ درجات)**

١ـ مقرر أخلاقيات المهنة لا يتعلق فقط بالجوانب الفنية في عمل ما وإنما أيضاً بالأساس الأخلاقي لهذا العمـل.( )
٢ـ تدخل السلامة والصحة المهنية في كل مجالات الحياة . ( )
٣ـ وجود ميثاق أخلاقي للمهنة هام لحل اي خلافات او جدل في مجال المهنة ( )
٤ـ الأنشطة الطلابية تسهم في اكساب الطلاب عديد من الأخلاقيات . ( )
٥ـ من اهم اهداف تدريس هذا المقرر تنمية القدرة على التقييم الأخلاقي للأفعال والأقوال في إطار العمل. ( )
٦ـ أخلاقيات المهنة تعني فقط الالتزام بالقوانين الحاكمة للعمل. ( )
٧ـ الالتزام الأخلاقي يسهم في شيوع الرضا الاجتماعي. ( )
٨ـ من مبررات إفشاء الأسرار المختبرية الخاصة بالمريض حماية النفس والدفاع عن شرف مهنته . ( )
٩ـ تسهم السلامة المهنية في مواقع العمل في ابعاد المخاطر عن العاملين. ( )
١٠ـ المواليد المستنسخة تعيش عادة لفترة أطول . ( )

السؤال الثاني: اكتب باختصار خمسا من المبادئ الأساسية لأخلاقيات البحث العلمي **(٥ درجات)**

١ـ	٢ـ
٣ـ	٤ـ
٥ـ	

السؤال الثالث: أنت في جميع الأحوال قدوة للآخرين بفعلك وان لم تقصد . علق في خمس نقاط **(٥ درجات)**

١ـ
٢ـ
٣ـ
٤ـ
٥ـ

انظر خلفه