

شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية



مراجعة عامة وفق الهيكل الوزاري

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التواصل الاجتماعي بحسب الصف الثاني عشر المتقدم



روابط مواد الصف الثاني عشر المتقدم على تلغرام

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المزيد من الملفات بحسب الصف الثاني عشر المتقدم والمادة كيمياء في الفصل الثاني

تجميعة أسئلة وفق الهيكل الوزاري	1
أسئلة مراجعة امتحانية وفق الهيكل الوزاري	2
مراجعة امتحانية وفق الهيكل الوزاري	3
تجميعة أسئلة وحلول وفق الهيكل الوزاري المتقدم	4
نموذج الهيكل الوزاري بريدج المسار المتقدم	5

CHEMISTRY

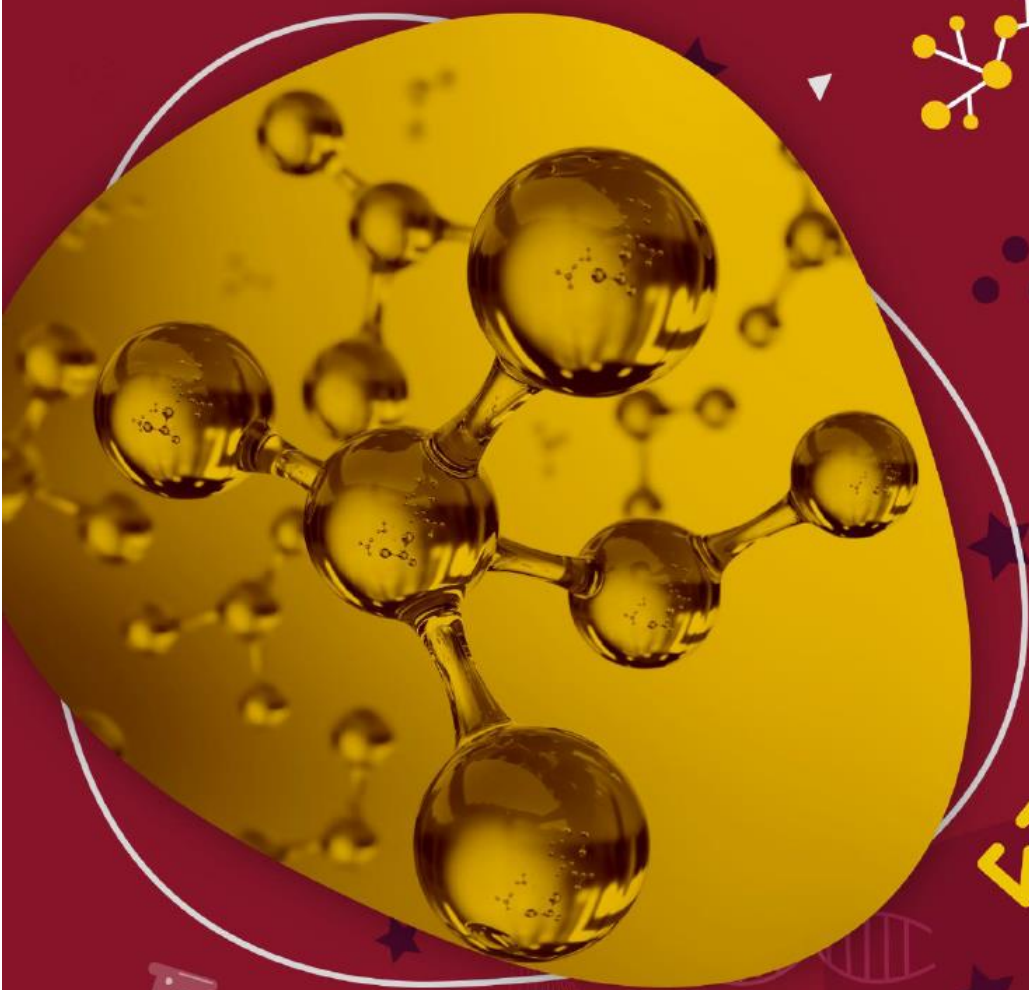
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Mr. Hesham Eltoukhy

EOT 2 Revision



2023-2024





EOT 2 Coverage Revision 2023-2024

CHM.5.3.04.001.02 يعدد خصائص محاليل الأحماض والقواعد (المذاق - أثرها على الكواشف - الملمس - تفاعلاتها - التوصيل الكهربائي)

CHM.5.3.04.001.02 List five general properties of aqueous bases and acids (taste, color of indicators, how it feels, reactions and electrical conductivity)

1) Which of the following statements describes the properties of solutions

of acids and bases?

a. Acids taste bitter and bases taste sour

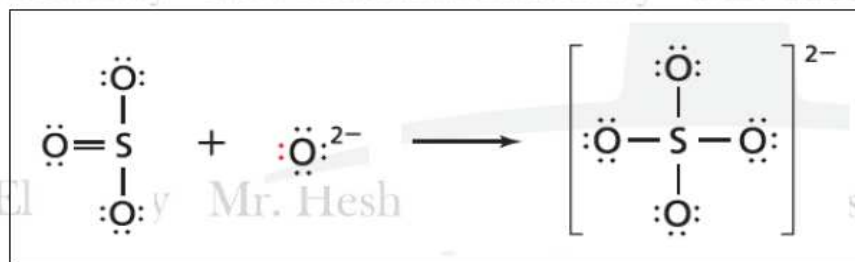
b. Solutions of acids and bases conduct electricity

c. Acid solutions turn litmus paper blue

d. Hydrogen gas is produced by the reaction of solutions of bases with metals

CHM.5.3.04.001.11 يعرف الأحماض والقواعد طبقاً لنظرية لويس

CHM.5.3.04.001.11 Define acids and bases according to Lewis theory

2) What does SO_3 represent in the following reaction?

a. Lewis base, it donates a pair of electrons

b. Lewis base, it accepts a pair of electrons

c. Lewis acid, it donates a pair of electrons

d. Lewis acid, it accepts a pair of electrons





CHM.5.3.04.006.01 يحدد ثابت تأين الحمض الضعيف K_a عند كتابة تعبير ثابت التأين لمختلف الأحماض الضعيفة

CHM.5.3.04.006.01 Define acid ionization constant, K_a , while writing the ionization constant expression for different weak acids

3) What is the K_a value of a 0.1 M HCNO solution and $pOH = 11.0$?

a. 1.01×10^{-5}

b. 1.01×10^{-12}

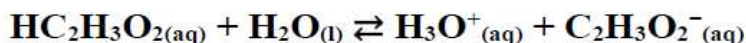
c. 1.0×10^{-21}

d. 1.0×10^{-10}

CHM.5.3.04.003.04 يتعرف العلاقة بين قوة الحمض وقاعدته المرافقة وقوة القاعدة وحمضها المرافق

CHM.5.3.04.003.04 Identify the relationship between the strength of an acid and its conjugate base and the strength of a base and its conjugate acid

4) For the following balanced reaction, which of the following statements is **correct**?



a. The equilibrium lies far to the right because the base $\text{C}_2\text{H}_3\text{O}_2^-$ is weak, and the conjugate base H_2O is strong

b. The equilibrium lies far to the left because the base $\text{C}_2\text{H}_3\text{O}_2^-$ is weak,

and the conjugate base H_2O is strong

c. The equilibrium lies far to the right because the base $\text{C}_2\text{H}_3\text{O}_2^-$ is strong, and the conjugate base H_2O is weak

d. The equilibrium lies far to the left because the base $\text{C}_2\text{H}_3\text{O}_2^-$ is strong, and the conjugate base H_2O is weak





CHM.5.3.04.003.05 يربط بين قوة القواعد الضعيفة وقيمة Kb وبين قوة الاحماض الضعيفة وقيمة Ka

CHM.5.3.04.003.05 Relate the strength of weak bases to the numerical values of Kb and the strength of weak acids to the numerical values of

5) Which of the following statements is **correct** regarding the following bases ionization equations?

Base	Ionization Equation	K_b (298 K)
Ethylamine	$C_2H_5NH_2(aq) + H_2O(l) \rightleftharpoons C_2H_5NH_3^+(aq) + OH^-(aq)$	5.0×10^{-4}
Methylamine	$CH_3NH_2(aq) + H_2O(l) \rightleftharpoons CH_3NH_3^+(aq) + OH^-(aq)$	4.3×10^{-4}
Ammonia	$NH_3(aq) + H_2O(l) \rightleftharpoons NH_4^+(aq) + OH^-(aq)$	2.5×10^{-5}
Aniline	$C_6H_5NH_2(aq) + H_2O(l) \rightleftharpoons C_6H_5NH_3^+(aq) + OH^-(aq)$	4.3×10^{-10}

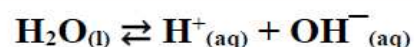
- a. Ethylamine is the least electrically conductive base
- b. Methylamine is weaker than ammonia
- c. Aniline is the base that contains the fewest ions when ionized
- d. The concentrations of ions resulting from the ionization of aniline are greater than the concentrations of the ions resulting from the ionization of ammonia

CHM.5.3.04.007.01 يستخدم Kw في حساب تركيز أيونات الهيدروجين والهيدروكسيد عند درجة حرارة ثابتة والعكس

CHM.5.3.04.007.01 Use Kw to calculate the hydronium ion and hydroxide ion concentration at a given temperature and vice versa

6) In the following equilibrium equation for pure water:

Why does the value of K_w not change



when other hydrogen ions added to water?

- a. shifting the equilibrium to the right and increasing the concentration of H^+ ions
- b. increasing the rate of ionization of water molecules
- c. increasing the concentration of OH^- ions in the solution
- d. H^+ reacts with OH^- to form more H_2O molecules





CHM. 5.3.04.007.02 يستخدم ثابت تأين الماء لحساب تركيز أيونات الهيدرونيوم والهيدروكسيد والرقم الهيدروجيني والرقم الهيدروكسيمي في المحاليل المائية

CHM.5.3.04.007.02 Describe the relation between pH and pOH and perform calculations involving this relation

7) What is the value of $[\text{OH}^-]$ and pOH in a solution whose concentration of H^+ is $4 \times 10^{-5} \text{ M}$?

choice	$[\text{OH}^-]$	pOH
a.	$2.5 \times 10^{-10} \text{ M}$	9.60
b.	1×10^{-10}	10.0
c.	$2.5 \times 10^{-9} \text{ M}$	8.60
d.	$1 \times 10^{-9} \text{ M}$	9.0

CHM.5.3.04.006.03 يربط بين حمضية وقاعدية المحاليل المائية وتركيز أيونات الهيدروجين والهيدروكسيد عند 25 C أو 298 K

CHM.5.3.04.006.03 Relate the acidity and basicity of an aqueous solution to the hydronium and hydroxide ion concentration and pH at 25°C or K 298

8) How many times more acidic is solution A than solution B?

a. 100

b. 10

c. 1

d. 1000

pH	Solution المحلول
1	A
3	B



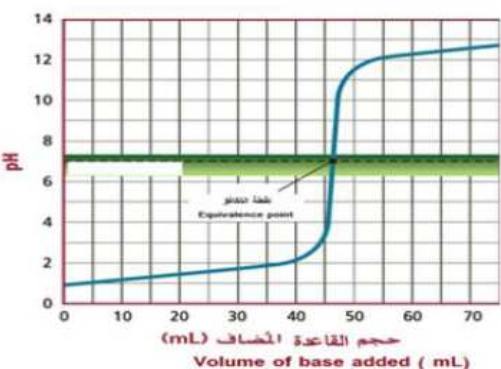


CHM.5.3.04.009.01 يصف منحنيات المعايرة لأنواع مختلفة من الأحماض والقواعد استنادًا إلى قيمة الرقم الهيدروجيني وطبيعة المحلول عند نقطة التكافؤ، نوع الكاشف المستخدم والتغير الذي يحدث في لونه والحجم المضاف من محلول المعايرة واللازم لتغيير لون الكاشف

CHM.5.3.04.009.01 Describe the titration curves of different acids and bases with respect to pH and nature of solution at equivalence point indicator used and its color change and volume of titrant needed for changing color of indicator

9) Which of the following statements is **correct** according to the titration curve and indicator table shown below?

Indicator	Range
Bromothymol blue	6.0 – 7.6
Methyl red	4.2 – 6.2
Methyl orange	3.2 – 4.6



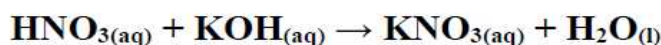
- a. The acid and the base are strong, and bromothymol blue is the suitable indicator
- b. The acid is strong, and the base is weak, and methyl red is the suitable indicator
- c. The acid and the base are weak, bromothymol blue is the suitable indicator
- d. The acid is weak, and the base is strong, methyl orange is the suitable indicator

CHM.5.3.04.004.06 بحسب مولارية (تركيز) المحلول وحجم المحلول المضاف باستخدام بيانات المعايرة

CHM.5.3.04.004.06 Calculate the molarity (concentration) and volume of a solution using titration data

10) What is the molarity of a nitric acid solution if 43.33 mL of a 0.1000 M KOH

is needed to neutralize 20.00 mL of the acid solution?



a. 0.830 M

b. 0.462 M

c. 0.560 M

d. 0.217 M

HNO ₃	KOH
M =	M =
V =	V =
n =	n =

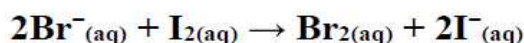




CHM.5.3.05.001.04 يميز بين الأكسدة والاختزال استنادًا إلى التغيير في أعداد التأكسد

CHM.5.3.05.001.04 Distinguish between oxidation and reduction in terms of change in oxidation number

11) In the reaction represented by the equation below.

Which of the following is **correct**?

a. The iodine receives electrons from the bromide ions, and it is oxidized

b. The iodine receives electrons from the bromide ions, and it is reduced

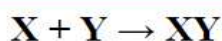
c. The bromide ions receive electrons from the iodine, and it is oxidized

d. The bromide ions receive electrons from the iodine, and it is reduced

CHM.5.3.05.001.08 يتعرف العامل المؤكسد والعامل المختزل في تفاعل أكسدة واختزال

CHM.5.3.05.001.08 Identify oxidizing agent and reducing agent in a redox reaction

12) In the general equation below, if you know that the reactant X is an oxidizing agent.

Which of the following describe it **correctly**?

1	Gains electrons - its oxidation number increases – it is the oxidized
2	Loses electrons - its oxidation number increases - it is the oxidized
3	Gains electrons - its oxidation number decreases - it is the reduced
4	Loses electrons - its oxidation number decreases - it is the reduced

a. 1

b. 2

c. 3

d. 4





CHM.5.3.05.001.02 يحدد عدد تأكسد العنصر في مركب

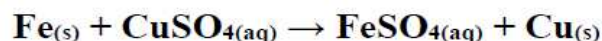
CHM.5.3.05.001.02 Define oxidation number of a compound

13) Which of the following substances has an oxidation number of **bromine** = +5?a. BrO_2^- b. BrO_3^- c. BrO_4^- d. BrO^-

CHM.5.3.05.001.10 يكتب نصف تفاعل الأكسدة ونصف تفاعل الاختزال لتفاعل أكسدة واختزال

CHM.5.3.05.001.10 Write oxidation-half reaction and reduction-half reaction for a redox reaction

14) What are the two redox half-reactions of the following redox reaction?



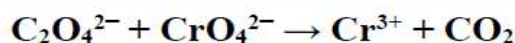
choice	Oxidation half-reaction	Reduction half-reaction
a.	$\text{Cu} \rightarrow \text{Cu}^{2+} + 2e^-$	$\text{Fe}^{2+} + 2e^- \rightarrow \text{Fe}$
b.	$\text{Fe}^{2+} + 2e^- \rightarrow \text{Fe}$	$\text{Cu} \rightarrow \text{Cu}^{2+} + 2e^-$
c.	$\text{Cu}^{2+} + 2e^- \rightarrow \text{Cu}$	$\text{Fe} \rightarrow \text{Fe}^{2+} + 2e^-$
d.	$\text{Fe} \rightarrow \text{Fe}^{2+} + 2e^-$	$\text{Cu}^{2+} + 2e^- \rightarrow \text{Cu}$





CHM.5.3.05.002 يزن التفاعلات الكيميائية بطريقة التفاعلات النصفية في المحلول الحمضي

CHM.5.3.05.002 Balance redox reaction using half-reaction method in acidic solution

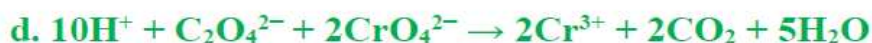
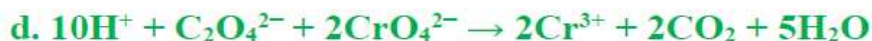
15) What is the balanced equation for the following redox equation?**(using half-reaction method, in acidic solution)**

Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy

Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy



Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy



Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy

CHM.5.3.05.002.05 يزن تفاعلات الأكسدة والاختزال في محلول قاعدي

CHM.5.3.05.002.05 Balance redox reaction in basic medium using half-reaction method

16) When balancing equations for redox reactions in a basic solution, What is done in the last step in the balancing method?

a. Hydrogen ions (H^+) and water molecules are added to either side of the equation

b. Hydroxide ions (OH^-) and water molecules are added to either side of the equation

c. The numbers of atoms only balanced in both sides of the equation

d. Adjusting the coefficients so that the number of electrons lost in oxidation equals the number of electrons gained in reduction

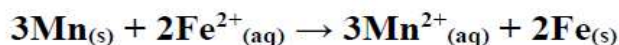




CHM.5.3.05.007.02 يتعرف مكونات الخلية الجلفانية (الزئبقية) - الأنود - الكاثود - الفنترة الملحية - الأسلاك - الإلكتروليت ويوضح دور كل مكون عند بدء التفاعل ويحدد اتجاه سريان الإلكترونات

CHM.5.3.05.007.02 Identify components of a voltaic or galvanic cell (anode, cathode, salt bridge, wires, electrolyte compartments); while explaining the role of each component, when does the reaction start and determining the direction of electron and current flow

17) Which of the following **correctly** describes the voltaic cell shown in the reaction below?



1	The mass of the Mn electrode increases during voltaic cell working
2	Anode reaction: $2\text{Fe} \rightarrow 2\text{Fe}^{2+} + 2\text{e}^{-}$
3	A salt bridge allows ions to pass from one side to the other
4	Electrons move from the Mn electrode to the Fe electrode through the metal wire

a. 1, 2 only

b. 1, 4 only

c. 3, 4 only

d. 2, 3 only

CHM.5.3.05.007.05 يستخدم جهود الاختزال القياسية لأصناف التفاعل لحساب جهد الخلية ويحدد ما إذا كان التفاعل يسير تلقائياً أم لا

CHM.5.3.05.007.05 Use the half-cell standard reduction potentials to calculate the electrochemical cell standard potential, while determining whether the redox reactions are spontaneous or non-spontaneous

18) What is the cell potential for the following balanced redox reaction, and is the reaction spontaneous or not?

تفاعل الخلية cell reaction	$2\text{Al}^{3+}_{(aq)} + 3\text{Cu}_{(s)} \rightarrow 3\text{Cu}^{2+}_{(aq)} + 2\text{Al}_{(s)}$	
جهد الاختزال reduction potential	$E^{\circ}_{\text{Al}} = -1.662 \text{ V}$	$E^{\circ}_{\text{Cu}} = +0.341 \text{ V}$

choice	$E^{\circ}_{\text{cell}} \text{ (V)}$	Reaction spontaneity
a.	-1.321	spontaneous
b.	+1.321	non-spontaneous
c.	-2.003	non-spontaneous
d.	+2.003	spontaneous





CHM.5.3.05.011.03 يقارن بين الخلية الإلكتروليتية والخلية الفولتية ، موضخاً أين يحدث كل من تفاعل الأكسدة والاختزال عند الأتود أم الكاتود واتجاه سريان الإلكترونات وتلقائية حدوث التفاعل او عدم تلقائية حدوثه

CHM.5.3.05.011.03 Compare between electrolytic cell and voltaic cell in terms of identifying where will reduction and oxidation processes take place, anode, cathode, direction of electron flow and current flow and spontaneity of the reaction occurring

19) Regarding the two cells in the figure below. Which of the following is **correct**?



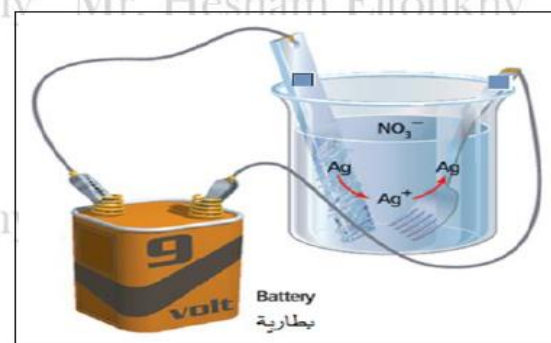
- Cell 1 is voltaic and converts chemical energy to electrical energy
- Cell 2 is electrolytic and converts chemical energy to electrical energy
- The reaction in cell 1 is spontaneous
- The reaction continues in cell 2 until the zinc strip is used up and then the reaction stops

CHM.5.3.05.011.05 يتعرف عملية الطلاء بالكهرباء ويصف كيف تعمل خلية الطلاء، ويتعرف الأتود والكاتود ونوع الإلكتروليت المطلوب حسب الفلز المراد استخدامه لطلاء جسم ما

CHM.5.3.05.011.05 Define electroplating while describing how it works, identifying anode, cathode and electrolyte needed for an electrolytic cell in which a selected metal is to be plated on an object

20) Objects are electroplated when a uniform coating is deposited as a protective or decorative layer, as shown in the figure below. Which of the following is **correct**?

- The metal used for coating is the cathode
- Silver is oxidized to silver ions at the cathode
- Silver is oxidized to silver ions at the anode
- The object to be plated is the anode





Answer Key

1	b	2	d	3	a	4	d	5	c
6	d	7	a	8	a	9	a	10	d
11	b	12	c	13	b	14	d	15	a
16	b	17	c	18	c	19	d	20	c

Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy

Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy

Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy

Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy

Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy Mr. Hesham Eltoukhy

