نموذج رقم (١)

نموذج إجابة

لامتحان الشهادة الثانوية الأزهرية

للعام الدراسي

١٤٤١/١٤٤٢هـ - ٢٠١٩/٢٠٢٠م

الدور الثاني

القسم : العلمي

مادة: الكيمياء مترجم

علماً بأن النموذج استرشادياً

الأزهر الشريف
قطاع المعاهد الأزهرية

نموذج إجابة استرشادي وتراعى الإجابات الأخرى الصحيحة

الصفحة ١ من ٥

الشهادة الثانوية الأزهرية ٢٠١٩/٢٠٢٠ (الدور الثاني)

الكيمياء لغات   نموذج (١)

	NO	Answer	Mark
(A)	1-	(d)	1
	2-	(b)	1
	3-	(a)	1
	4-	(d)	1
	5-	(c)	1

Question (1)

		Answer	Mark
(B)	**First:**	1) emf = oxidation potential of K + reduction potential of Cl_2 = 2.924 + 1.36 = 4.284 V	1
		2) Cell daigram $2K / 2K^+ // Cl_2 / 2Cl^-$	1
	Second:	1) $3Fe + 8H_2SO_4 \xrightarrow[\Delta]{Conc.} FeSO_4 + Fe_2(SO_4)_3 + 8H_2O + 4SO_4$	1
		2) $Fe_3O_4 + 4H_2SO_4 \xrightarrow[\Delta]{Conc.} FeSO_4 + Fe_2(SO_4)_3 + 4H_2O$	1
(C)	1-	$FeCO_3 \xrightarrow{\Delta} FeO + CO_2$ (½) $FeO + H_2SO_4 \xrightarrow{dil} FeSO_4 + H_2O$ (½)	1
	2-	$2CH_4 \xrightarrow[\text{Fast cooling}]{1500^oC} C_2H_2 + 3H_2$ (½) $C_2H_2 + Br_2 \longrightarrow C_2H_2Br_2$ (½)	1
	3-	$CH_3COONa + NaOH \xrightarrow[\Delta]{CaO} CH_4 + Na_2CO_3$ (½) $CH_4 \xrightarrow[\text{No air}]{1000^oC} C + 2H_2$ (½)	1

	NO	Answer	Mark
	1-	Magnesium	1
	2-	Substitutional allyos	1
(A)	3-	Catalyst	1
	4-	Molecular formula	1
	5-	Quantitative analysis	1

<div align="center">Question (2)</div>

	NO	Answer	Mark
(B)		Equivalent weight of Cu $= \dfrac{63.5}{2} = 31.75$ gm Quantity of electricity $= 5 \times 193 = 965$ coulomb 96500 C $\longrightarrow 31.75$ gm 965 C $\longrightarrow \times$ gm Mass of Cu in first cell $= \dfrac{965 \times 31.75}{96500} = 0.3175$ gm Mass of Cu in second cell $= \dfrac{9650 \times 31.75}{96500} = 3.175$ gm Mass on Cu in third cell $= \dfrac{0.5 \times 31.75}{1} = 15.875$ gm **Conclusion**: the mass of deposited material increasing with increasing the quantity of electricity and this reslut verify Faraday's first law.	4
(C)	1-	A galvanic cell is formed in which iron becomes more active metal the "anode", while tin becomes less active metal the "cathode" so iron corroded.	1
	2-	$Mg + 2HCl \longrightarrow MgCl_2 + H_2 \uparrow$ Due to H_2 gas was evolved, the products donot react with each other.	1
	3-	Due to the formation of a thin layer of oxide which protect the metal from further reaction.	1

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الصفحة ٣ من ٥

الشهادة الثانوية الأزهرية ٢٠١٩/٢٠٢٠ (الدور الثاني)

الكيمياء لغات   نموذج (١)

Question (3)

	NO	Answer	Mark
(A)	1-	(✓)	1
	2-	(X) (½) Correction: 2 mole or Fe^{3+} (½)	1
	3-	(✓)	1
	4-	(✓)	1
	5-	(X) (½) Correction: leads to stopping the oxidation and reduction reaction (or) stopping the flow of electric current in the external wire. (½)	1
(B)	1-	$(COO)_2 Fe \xrightarrow[\text{No air}]{\Delta} FeO + CO_2 + CO$	1
	2-	$C_8 H_{18} \xrightarrow[\text{catalyst}]{\Delta. P} C_4H_8 + C_4 H_{10}$	1
	3-	$2PbSO_{4(s)} + 2H_2O_{(\ell)} \xrightarrow{\text{charge}} Pb_{(s)} + PbO_{2(S)} + 4H^+_{(aq)} + 2SO^{2-}_{4(aq)}$	1
	4-	$NH_4 Cl_{(s)} + H_2O_{(\ell)} \rightleftharpoons H^+_{(aq)} + Cl_{(aq)} + NH_4OH_{(aq)}$	1
(C)		$2KOH + H_2 SO_4 \longrightarrow K_2 SO_4 + 2H_2O$ $\dfrac{M_a V_a}{n_a} = \dfrac{M_b V_b}{n_b}$ $M_b = \dfrac{0.2 \times 10 \times 2}{20} = 0.2M$ KOH mass $= 56 \times 0.4 \times 0.2 = 4.48$ gm % of KOH $= \dfrac{4.48 \times 100}{5.6} = 80\%$	3

		Question (4)	
	NO	Answer	Mark
(A)	1-	Cyclic unsaturated	1
	2-	Neutral	1
	3-	opposite	1
	4-	Bauxite	1
	5-	red	1
(B)	first 1-	Stablished the law of mass action or founded a law expessing the relationship between velocity of the chemical reaction and concentration of the reactants.	1
	first 2-	A reaction of alkenes with $KMnO_4$ in alkaline medium to detect the double bond.	1
	Second 1-	$$H-\overset{\overset{\displaystyle H}{|}}{\underset{\underset{\displaystyle H}{|}}{C}} - \overset{\overset{\displaystyle Cl}{|}}{C} = C - H \quad (½)$$ $H-C-H$ $H-C-H$ H 1-Chloro-2-methyl-1-butene (½)	1
	Second 2-	$$H-\overset{\overset{\displaystyle H}{|}}{\underset{\underset{\displaystyle H}{|}}{C}} - C \equiv C - \overset{\overset{\displaystyle Br}{|}}{C} - \overset{\overset{\displaystyle H}{|}}{\underset{\underset{\displaystyle H}{|}}{C}} - H \quad (½)$$ 4-bromo-2-bentyne (½)	1
(C)	1-	Indicator of the first analytical group (dil. HCl) (½) Indicator of the fifth analytical group (Ammonium Carbonate Soln) (½)	1
	2-	Steel (interstitial alloy) (½) Cementite (inter - metalic alloy) (½)	1
	3-	Organic compounds (mainly contain Carbons atoms) (½) Inorganic compounds (may contain carbon atoms in addition to other elements) (½)	1

	Question (5)			
	NO		**Answer**	**Mark**
(A)	1-		The maximum water vapour pressure in air at a certain temperature.	1
	2-		A process in which all unionized molecules are changed into ions.	1
	3-		Measuring concentration of acid or base using base or acid knowing their concentration of and volume.	1
	4-		This is the kind of electric cells which we can obtain electric current as a result of spontaneous oxidation - reduction reaction.	1
	5-		Condensation takes place between two different monomers and accompanied by losing a simple molecule such as water.	1
(B)	first	1-	$FeCl_3$ with ammonium thiocyanate give blood red colour (iron III thiocyanate) (½) $FeCl_3$ with ammonium hydroxide give browon reddish red ppt. (½)	1
		2-	$Ag\ NO_3$ with sodium ioded gives yellow ppt. insoluble in ammonia solution. (½) $AgNO_3$ with sodium phosphate gives a yellow ppt. soluble in ammonia solution. (½)	1
	Second			2
(C)			$$Kc = \frac{[NO_2]^2}{[N_2][O_2]^2}$$ $$Kc = \frac{(0.2)^2}{(0.4)(0.2)^2} = 2.5$$	3