INDIAN SCHOOL MUSCAT

FIRST PRE-BOARD EXAMINATION

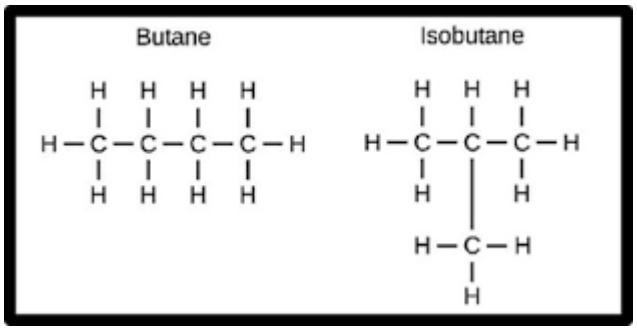
SET A

JANUARY 2020

CLASS X

Marking Scheme – SCIENCE [THEORY]/ CHEMISTRY

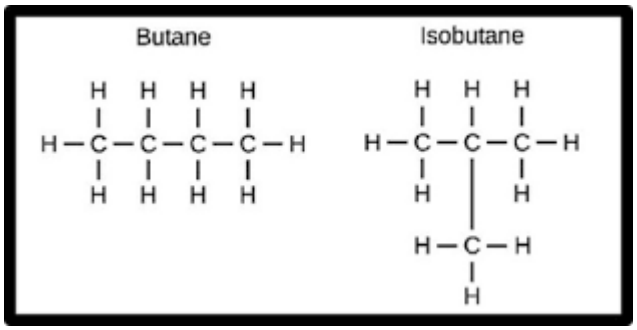
SECTION - A		
Q.NO.	ANSWER	MARKS
1	Atomic mass of Na=7+39/2=46/2=23	1
4	CHE	
4(a)	(a) Silver	1
4(b)	(b)Cinnabar	1
4(c)	(d)Aluminium	1
4(d)	(d)enrichment of ore	1
12	(b)sodium OR d) Pb & Sn	1
	For question numbers 13 and 14, two statements are given- one labeled *Assertion* (A) and the other labeled *Reason* (R). Select the correct answer to these questions from the codes (i), (ii).(iii) and (iv) as given below i) **Both A and R are true and R is correct explanation of the assertion.** ii) **Both A and R are true but R is not the correct explanation of the assertion.** iii) **A is true but R is false.** iv) **A is false but R is true**	
13	Option (iv)-Ais false but R is true	1
SECTION - B		
15	(a)The oxidation of oils & fats into bad smell and taste substances. 1 (i)adding anti-oxidants 1/2 (ii)flushing with nitrogen gas 1/2 (b)H_2S is reducing agent while SO_2 is oxidising agent 1	3

16	X is Cl_2 (1) Y is $CaOCl_2$ (1) $Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + H_2O$ (1) OR When baking soda is heated ,it decomposes to Na_2CO_3,water & CO_2 (1) $2NaHCO_3 \rightarrow Na_2CO_3 + H_2O + CO_2$ (1) CO_2 gas produced during the reaction makes the cakes fluffy (1)	3
17	(i)E (ii)D (iii)D is greater than E since size of the elements decreases on moving left to right due to increase in effective nuclear charge.	3
	SECTION- C	
25	P =Ethanol (C_2H_5OH) Q =Ethene ($CH_2=CH_2$) R =Ethane (C_2H_6) (½+½+½) $C_2H_5OH \xrightarrow[\text{Con.}H_2SO_4]{} CH_2=CH_2 + H_2O$ (1) $CH_2=CH_2 \xrightarrow[\text{Ni catalyst}/H_2]{} C_2H_6$ (1) $C_2H_6 + 7/2\ O_2 \rightarrow 2CO_2 + 3H_2O$ (1) conc. H_2SO_4 is used as dehydrating agent. (½) OR Carbon compounds having same molecular formula but different structural formula. (1) Butane has two structural isomers.  (1+1) Structure of benzene (1) Structure of cyclohexane (1)	5
26	(i)Mg has high affinity towards oxygen than carbon. (1) (ii)Electrolytic reduction process of molten NaCl (1) At cathode:$2Na^+ + 2e^- \rightarrow 2Na$ (1/2) At anode :$2Cl^- \rightarrow Cl_2 + 2e$ (1/2) (iii)$Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3 + Heat$ (1) The amount of heat energy is so large that the metal (Fe)obtained in the molten state. (1)	5

SET – B

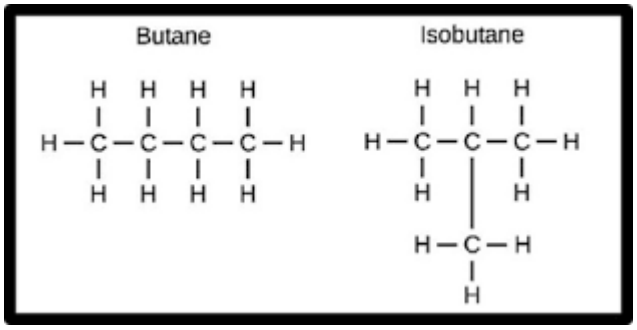
	SECTION - A	
Q.NO.	ANSWER	MARKS
1	Some metal oxides show both acidic as well as basic character. ZnO,Al_2O_3	1

4	CHE	
4(a)	(a) Silver	1
4(b)	(b)Cinnabar	1
4(c)	(d)Aluminium	1
4(d)	(d)enrichment of ore	1
12	(d) I and II OR (b) presence of sunlight	1
	For question numbers 13 and 14, two statements are given- one labeled *Assertion* (A) and the other labeled *Reason* (R). Select the correct answer to these questions from the codes (i), (ii).(iii) and (iv) as given below i) **Both A and R are true and R is correct explanation of the assertion.** ii) **Both A and R are true but R is not the correct explanation of the assertion.** iii) **A is true but R is false.** iv) **A is false but R is true**	
13	Option (ii)-both A and R are true but R is not the correct explanation of the assertion.	1
	SECTION - B	
15	Ethanol is the second member of the homologous series of alcohols. CH_3CH_2OH (1) i. Ethanol reacts with sodium to liberate hydrogen gas. $2CH_3CH_2OH + 2Na \rightarrow 2CH_3CH_2ONa + H_2$ (1) Concentrated sulphuric acid dehydrates ethanol to ethene. $CH_3CH_2OH \xrightarrow{Con\ H_2SO_4} CH_2=CH_2$ (1)	3
16	X is Cl_2 (1) Y is $CaOCl_2$ (1) $Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + H_2O$ (1) OR When baking soda is heated ,it decomposes to Na_2CO_3,water & CO_2 (1) $2NaHCO_3 \rightarrow Na_2CO_3 + H_2O + CO_2$ (1) CO_2 gas produced during the reaction makes the cakes fluffy (1)	3
17	(i)E (ii)D (iii)D is greater than E since size of the elements decreases on moving left to right due to increase in effective nuclear charge.	3
	SECTION- C	
25	(i)CH_3CH_2OH CH_3COOH (½+½)	5

	(ii)(a) When ethanol is heated with excess of concentrated sulphuric acid at 443 K, it gets dehydrated to form ethene. (1) (b) C_2H_5OH + Con H_2SO_4 → $H_2C=CH_2 + H_2O$ (1) iii. A molecule of soap is made up of two parts: (a) An ionic part which is hydrophilic, i.e, water soluble. (b) A hydrocarbon chain which is hydrophobic i.e., water-repelling and oil soluble. When soap is at the surface of water, the hydrophobic tail protrudes out of water while the ionic end remains inside water. Inside water, the molecules form clusters with the hydrophobic tails in the interior of the cluster and the ionic ends on the surface of the cluster. This formation is called a micelle. Soap, in the form of micelle collects the oily dirt in the center of the micelle. The micelles stay in solution as a colloid and do not precipitate due to ion-ion repulsion. Thus, the dirt suspended in water is washed away during rinsing. (2) OR Carbon compounds having same molecular formula but different structural formula. (1) Butane has two structural isomers.  (1+1) Structure of benzene (1) Structure of cyclohexane (1)	
26	Ans : i). X belongs to Group 17 and 3rd period. Y belongs to Group 2 and 4th period. ii.) X—Non-metal, Y—Metal (½+½) iii).Basic oxide; (iv)Ionic bonding Electron dot structure	5

SET – C

	SECTION - A	
	For question numbers 13 and 14, two statements are given- one labeled *Assertion* (A) and the other labeled *Reason* (R). Select the correct answer to these questions from the codes (i), (ii).(iii) and (iv) as given below i) **Both A and R are true and R is correct explanation of the assertion.** ii) **Both A and R are true but R is not the correct explanation of the assertion.** iii) **A is true but R is false.** iv) **A is false but R is true**	

1	The bubbles of hydrogen gas formed stick to the surface of the metal.	1
12	Ans : (c) red, blue OR Ans : (b) Zn	1
13	Option (iv)-A is false but R is true.	1
15	i. The chemical formula of washing soda is $Na_2CO_3.10H_2O$ (1/2) ii. Baking soda ($NaHCO_3$) is strongly heated followed by recrystallisation. (1/2) $2NaHCO_3 \xrightarrow{heat} Na_2CO_3+H_2O+ CO_2$ (1) $Na_2CO_3 +10\ H_2O \rightarrow Na_2CO_3.\ 10\ H_2O$ (1/2) iii. Washing soda is used in the manufacture of glass (1/2)	3
16	The oxidation of oils & fats into bad smell and taste substances. 1 #adding anti-oxidants 1/2 #flushing with nitrogen gas 1/2 ii.H_2S is reducing agent while SO_2 is oxidising agent 1 OR Iron is more reactive than Cu 1 Fe displaces Cu from $CuSO_4$ and forms $FeSO_4$ 1 $Fe+ CuSO_4 \rightarrow FeSO_4+Cu$ 1	3
17	Ethyl alcohol is an essential constituent of wine and beer. Therefore, A is ethyl alcohol. (1) CH_3CH_2OH.Oxidation of ethyl alcohol gives acetic acid. Vinegar contains acetic acid. Therefore, B is acetic acid.CH_3COOH (1) When A and B react in the presence of an acid catalyst, the ester, ethyl acetate is formed. $CH_3\ CH_2\ OH+ CH_3\ COOH \xrightarrow{Conc H_2SO_4} CH_3\ COOC_2\ H_5+H_2\ O$ (1)	3
25	P =Ethanol ($C_2\ H_5\ OH$) Q =Ethene ($CH_2 =CH_2$) R =Ethane ($C_2\ H_6$) (½+½+½) $C_2\ H_5\ OH \xrightarrow{Con.H_2SO_4} CH_2=CH_2 +H_2O$ (1) $CH_2 =CH_2 \xrightarrow{Ni\ catalyst/H_2} C_2H_6$ (1) $C_2H_6 +7/2\ O_2 \rightarrow 2CO_2 + 3H_2O$ (1) conc. $H_2\ SO_4$ is used as dehydrating agent. (½) OR Carbon compounds having same molecular formula but different structural formula. (1) Butane has two structural isomers.  (1+1) Structure of benzene (1) Structure of cyclohexane (1)	5

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Q.NO.	ANSWER	MARKS
SECTION - B		
SECTION- C		