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ಕರ್ನಾಟಕ ಪ್ರೌಢ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM, BANGALORE – 560 003

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆ, ಮಾರ್ಚ್ / ಏಪ್ರಿಲ್ — 2019

S. S. L. C. EXAMINATION, MARCH/APRIL, 2019

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 02. 04. 2019] ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Chem.)**

Date : 02. 04. 2019] **CODE NO. : 83-E (Chem.)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ರಸಾಯನಶಾಸ್ತ್ರ / **Chemistry**)

(ಹಳೆ ಪಠ್ಯಕ್ರಮ / Old Syllabus)

(ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

[ಗರಿಷ್ಠ ಅಂಕಗಳು : **100**

[Max. Marks : 100

Qn. Nos.	Value Points	Total
3.	The metal compound used in the manufacture of yellow coloured glass is (A) cobalt compound (B) ferric compound (C) chromium compound (D) nickel compound *Ans.* : (B) — ferric compound	1

Qn. Nos.	Value Points	Total
7.	The general molecular formula of alkynes is (A) C_nH_{2n-2} (B) C_nH_{2n+2} (C) C_nH_{2n} (D) C_nH_{2n+1} Ans. : (A) — C_nH_{2n-2}	1
9.	In the following chemical reaction metal represented by 'X' is $CuSO_4 + \boxed{X} \rightarrow \boxed{X}SO_4 + Cu$ (A) Ag (B) Au (C) Fe (D) Hg *Ans.* : (C) — Fe	1
10.	The aqueous solution that conducts electricity among the following is (A) sugar solution (B) fructose solution (C) glucose solution (D) sodium chloride solution *Ans.* : (D) — sodium chloride solution	1
15.	State modern periodic law. *Ans.* : "The properties of elements are periodic functions of their atomic number."	1
16.	What are the merits of glazing the earthenwares ? *Ans.* : Glazing fills the pores and gives a shining and smooth finish to the earthen materials.	1
18.	Write the two functional groups present in salicylic acid. *Ans.* : — OH alcohol group $\frac{1}{2}$ — COOH carboxylic acid group. $\frac{1}{2}$	1

Qn. Nos.	Value Points	Total
19	Four elements of second period of periodic table is given below. Observe the table and answer the following questions :	

Elements	Boron	Carbon	Nitrogen	Oxygen
Atomic number	5	6	7	8

(a) Name the element having (i) highest atomic size (ii) highest ionisation energy.

(b) Mention the relationship between atomic size and ionisation energy.

Ans. :

(a) Element with highest atomic size is Boron. $\frac{1}{2}$

Element with highest ionisation energy is Oxygen. $\frac{1}{2}$

(b) Atomic size and ionisation energy have inverse relationship. 1 — 2

OR

As the atomic size increases ionisation energy decreases.

24. Name the acids used in the extraction of amorphous silicon in the following cases.

(a) To separate magnesium oxide

(b) To remove unreacted silica in the chemical reaction.

OR

Write the uses of the following silicon compounds :

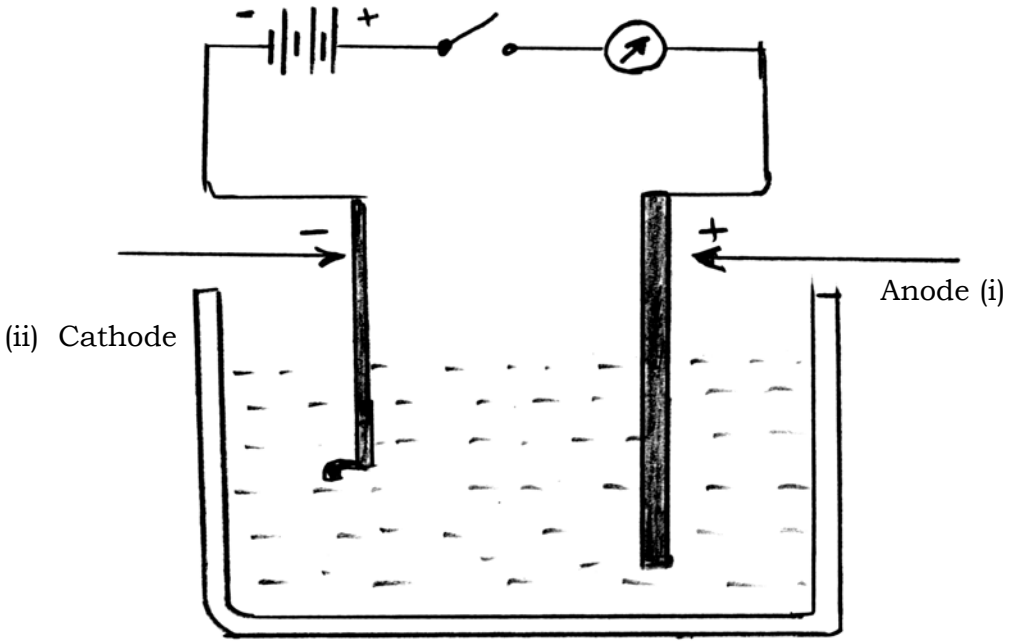
(a) Silicon carbide

(b) Zeolite.

Ans. :

Qn. Nos.	Value Points	Total
	(a) Hydrochloric acid. 1	
	(b) Hydrofluoric acid. 1	2
	OR	
	(a) Silicon carbide is used in cutting and grinding tools. 1	
	(b) Zeolite is used in the removal of hardness of water. 1	2
26.	Write the balanced chemical equations for the following chemical reactions.	
	(a) When aluminium reacts with chlorine	
	(b) When sodium reacts with water.	
	OR	
	Molten cryolite is used in the extraction of aluminium. Give reason.	
	Ans. :	
	(a) $2\ Al + 3\ Cl_2 \rightarrow 2\ Al\ Cl_3$ 1	
	(b) $2Na + 2H_2O \rightarrow 2NaOH + H_2\uparrow$ 1	2
	OR	
	(a) The melting point of alumina decreases when molten cryolite is added to molten alumina. 1	
	(b) Molten cryolite acts as an electrolyte. 1	2
30.	Draw the diagram of the apparatus used in electroplating. Label the following parts :	
	(i) Anode	
	(ii) Cathode.	
	Ans. :	

Qn. Nos.	Value Points	Total



(1 + $\frac{1}{2}$+$\frac{1}{2}$) 2

34. The data obtained in an experiment performed on the pressure and volume of given mass of gas at constant temperature is given in the following table :

Pressure (in pascals)	Volume (in litres)
$1{\cdot}5 \times 10^5$	10
$2{\cdot}5 \times 10^5$	*X*
$3{\cdot}0 \times 10^5$	5
Y	2

Based on the above data find the values of *X* and *Y*.

Ans. :

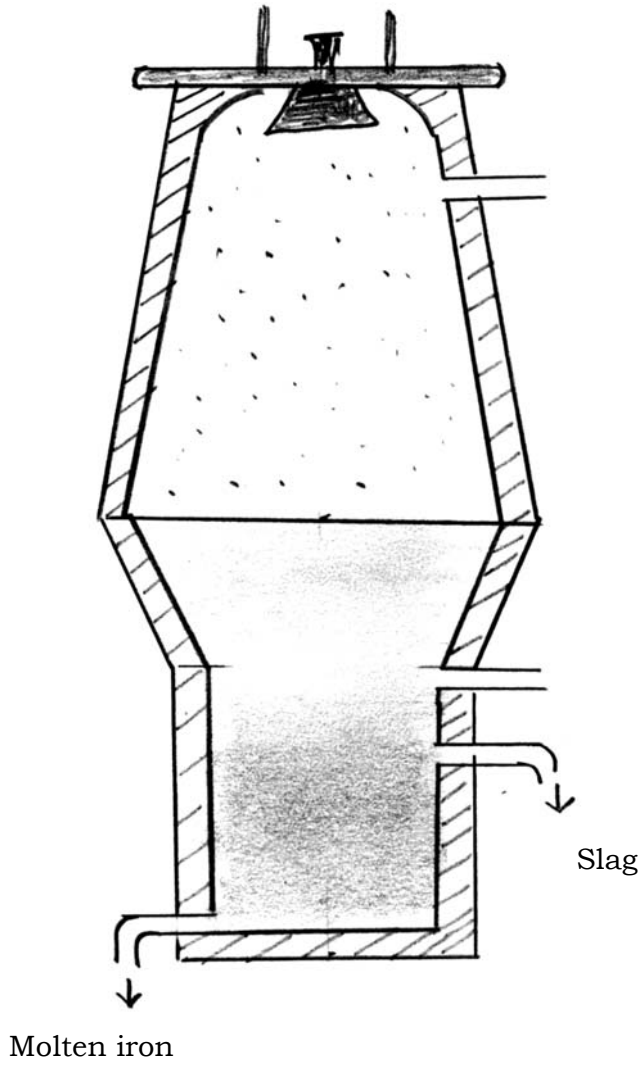
$P = 1{\cdot}5 \times 10^5$ pascal

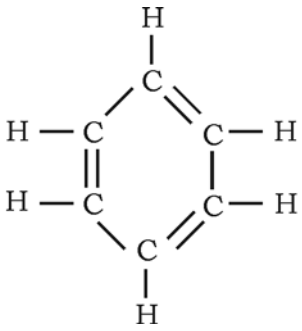
V = 10 litre

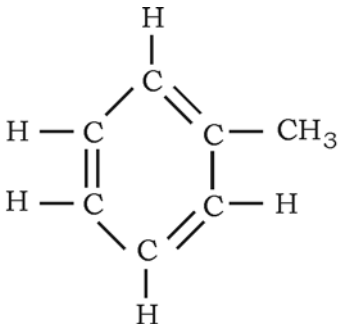
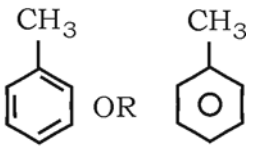
Qn. Nos.	Value Points	Total
	$PV = 1{\cdot}5 \times 10^5 \times 10$ $PV = 15 \times 10^5$ To find X : $PV = 15 \times 10^5$ $2{\cdot}5 \times 10^5 \times X = 15 \times 10^5$ $\frac{1}{2}$ $X = \frac{15 \times 10^5}{2 \cdot 5 \times 10^5}$ X = 6 litre. $\frac{1}{2}$ To find Y : $PV = 15 \times 10^5$ $Y \times 2 = 15 \times 10^5$ $Y = \frac{15 \times 10^5}{2}$ $\frac{1}{2}$ $Y = 7{\cdot}5 \times 10^5$ $\therefore$ $Y = 7{\cdot}5 \times 10^5$ pascal. $\frac{1}{2}$	2
38.	Mention the four stages of manufacture of paper. *Ans.* : Steps involved in paper manufacturing process : (i) Pulping (ii) Mixing additives (iii) Drying (iv) Finishing. $4 \times \frac{1}{2}$	2

Qn. Nos.	Value Points	Total
42.	What is saponification value ? Mention its importance. *Ans.* : *Saponification value* : Saponification value can be defined as the amount of potassium hydroxide in milligrams required to neutralize the fatty acid present in one gram of oil or fat. 1 Saponification value of the oil or fat is necessary to manufacture good quality soaps. 1	2
43.	State Graham's law of diffusion. Write its mathematical form. *Ans.* : *Graham's law of diffusion* : "The rate of diffusion of a gas is inversely proportional to the square root of its density at the given temperature and pressure." 1 $r \propto \frac{1}{\sqrt{d}}$ $r = \frac{K}{\sqrt{d}}$. 1	2
46.	Explain the process of manufacture of sugar from sugarcane. OR Explain the process of manufacture of ethyl alcohol from molasses. *Ans.* : Manufacture of sugar from sugarcane. (i) Sugarcane is cut into pieces crushed in a series of roller mills. Maximum extraction of the juice is ensured.	

Qn. Nos.	Value Points	Total
	(ii) The juice is warmed and run into settling tanks. (iii) Juice is then decanted from the sediment and made alkaline with calcium hydroxide. (iv) The clear juice is concentrated into a syrup by evaporation under reduced pressure. (v) The syrup is cooled to crystallise the sugar. The crystals are dissolved in hot water and decolourised with animal charcoal or coconut shell charcoal then filtered, dark colour is slightly eliminated by adding hydrosol. (vi) The filtrate is concentrated and evaporated under reduced pressure to get a syrup which is crystallised to get white crystals of sugar. $(6 \times \frac{1}{2})$	3
	OR Manufacture of ethyl alcohol from molasses : (i) Molasses is diluted with water and acidified by adding dilute sulphuric acid. $\frac{1}{2}$ (ii) Yeast is added to the solution and the container is closed. $\frac{1}{2}$ (iii) The temperature is maintained around 308 K. $\frac{1}{2}$ (iv) Fermentation takes place in about a week, fermented matter contains about 6 to 10 per cent alcohol. It is fractionally distilled to obtain 95% alcohol. $\frac{1}{2}$ $C_{12}H_{22}O_{11} + H_2O \xrightarrow{\text{Invertase}} C_6H_{12}O_6 + C_6H_{12}O_6$ Sucrose Glucose + Fructose $\frac{1}{2}$ $C_6H_{12}O_6 \xrightarrow{\text{Zymase}} 2\,C_2H_5OH + 2CO_2$ Ethanol $\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
49.	Draw the diagram of blast furnace used in the extraction of iron. Label the following : (i) Molten iron (ii) Slag. *Ans.* :  Blast furnace (2 + $\frac{1}{2}$ + $\frac{1}{2}$)	3

Qn. Nos.	Value Points	Total
51.	Write the structural formula and any *two* uses of the following hydrocarbons : (a) Benzene (b) Toluene. *Ans.* : (a) Benzene :  OR  OR  OR  1 Uses of benzene. (i) Used as a solvent for oils, fats, resins, rubber, sulphur, iodine etc. (ii) Used in the manufacture of dyes, drugs, perfumes, explosive etc. (iii) Used in the preparation of gammexane (iv) Used for dry cleaning. (Any *two*) ($2 \times \frac{1}{2}$)	

Qn. Nos.	Value Points		Total
	(b) Toluene :  OR  OR	1	
	Uses of toluene :		
	(i) Used as a solvent for oils, fats, paints, lacquers, resins etc.	$\frac{1}{2}$	
	(ii) Used in the manufacture of Trinitrotoluene (TNT)	$\frac{1}{2}$	4