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

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

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S. S. L. C. EXAMINATION, JUNE, 2017

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 21. 06. 2017] ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Chem.)**

Date : 21. 06. 2017] **CODE NO. : 83-E (Chem.)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ರಸಾಯನಶಾಸ್ತ್ರ / **Chemistry**)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

[ಗರಿಷ್ಠ ಅಂಕಗಳು : 100

[Max. Marks : 100

Qn. Nos.	Value Points	Total
1.	According to Graham's law of diffusion, at the given temperature and pressure the rate of diffusion of a gas is	
	Ans. : (C) inversely proportional to the square root of its density.	1
4.	'Norit' is used in the manufacture of sugar because	
	Ans. : (C) sugar gets decolourised.	1

Qn. Nos.	Value Points	Total
11.	A few terms used in metallurgy are given in Column-A and their meanings are given in Column-B. Match them and write the answers along with its letter :	

Column - A	***Column - B***
(A) Concentration of the ore	(i) The substance added to the ore before heating
(B) Calcination	(ii) Heating the ore just below its melting point in the presence of air
(C) Flux	(iii) Impurities present in the ore
(D) Roasting	(iv) Subjecting the ore to the method of electrolysis
	(v) Increasing the percentage of desired component of the ore
	(vi) Heating the ore just below its melting point in the absence of air
	(vii) Crystallising the ore.

Ans. : (A) (v) Increasing the percentage of desired component of the ore 1

(B) (vi) Heating the ore just below its melting point in the absence of air 1

(C) (i) The substance added to the ore before heating 1

(D) (ii) Heating the ore just below its melting point in the presence of air 1 — 4

14. Define Charles law.

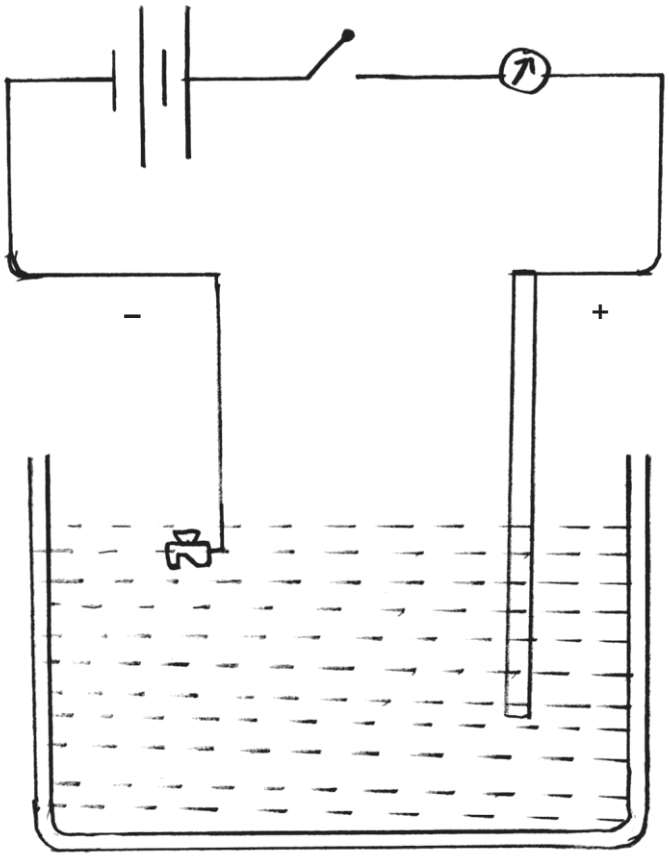
Ans. :

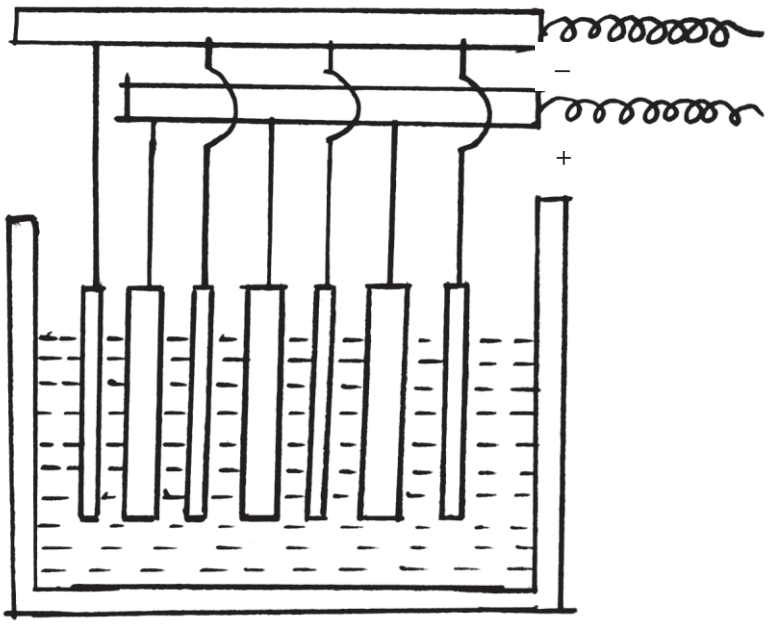
At constant pressure, the volume of a fixed mass of a gas is directly proportional to its absolute temperature. — 1

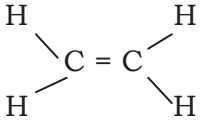
18. The electrochemical equivalent of copper and gold are 0·0003 gm/coulomb and 0·000681 gm/coulomb respectively. If the equal amount of current is passed for the equal time interval in copper and gold voltameters, then in which voltameter the deposition of the metal at the cathode is more ? Why ?

Ans. : Gold $\frac{1}{2}$

Because, the mass of the substance deposited is directly proportional to its chemical equivalence. $\frac{1}{2}$ — 1

Qn. Nos.	Value Points	Total
21.	Explain the method of manufacturing 95% pure ethyl alcohol from molasses. *Ans.* : Molasses is diluted with water and acidified by adding dilute sulphuric acid. $\frac{1}{2}$ Yeast is added and the temperature is maintained at 308 K. $\frac{1}{2}$ Fermented matter is called *Wort*. $\frac{1}{2}$ Wart is fractionally distilled to get 95% pure alcohol. $\frac{1}{2}$	2
22.	Draw the diagram of the apparatus used in electroplating. *Ans.* :  	2

Qn. Nos.	Value Points	Total
29.	Draw the diagram of the apparatus used in the electrolytic refining of copper. *Ans.* :  	2
32.	Name the type of glass used in the following situations : (a) Manufacture of laboratory equipments (b) Manufacture of lens (c) Manufacture of window glass (d) Used as wind shield in aeroplane industries. *OR* Name the type of paper used in the following situations : (a) To wipe the face (b) Manufacture of post card (c) To separate fine solids from liquids (d) To wrap the cookies.	

Qn. Nos.	Value Points	Total
	Ans. :	
	(a) Borosilicate glass $\frac{1}{2}$	
	(b) Lead glass $\frac{1}{2}$	
	(c) Soda glass $\frac{1}{2}$	
	(d) Safety glass $\frac{1}{2}$	2
	OR	
	(a) Tissue paper $\frac{1}{2}$	
	(b) Card board paper $\frac{1}{2}$	
	(c) Filter paper $\frac{1}{2}$	
	(d) Wax paper. $\frac{1}{2}$	2
33.	Explain the method of extraction of crystalline silicon with chemical equation.	
	Ans. :	
	Crystalline silicon is obtained when excess of silica is heated with coke in the electric furnace in the absence of air. 1	
	$SiO_2 + 2C \xrightarrow{Heat} Si + 2CO\uparrow$ 1	2
34.	In a specific group of unsaturated hydrocarbons, though the ratio of carbon and hydrogen atoms is 1 : 2, CH_2 is not the first member of those hydrocarbons. What is the reason for this ? Write the structural formula of the first member of that hydrocarbon group.	
	Ans. :	
	The tetravalent property of carbon is not satisfied. *OR* carbon cannot form double bond with hydrogen atom. 1	
	 1	2

Qn. Nos.	Value Points	Total
36.	What is allotropy ? Mention the two crystalline allotropes of carbon. *Ans.* : The phenomenon in which an element occurs in different forms, differ in their physical properties but identical in their chemical properties. 1 Graphite, diamond, fullerene, and graphene (Any *two*) $\frac{1}{2} + \frac{1}{2}$	2
38.	Write the balanced chemical equation for the following chemical reactions : (a) Sodium reacts with water (b) Zinc reacts with dilute sulphuric acid. *Ans.* : (a) $2Na + 2H_2O \rightarrow 2NaOH + H_2\uparrow$ 1 (b) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2\uparrow$ 1	2
41.	List any four uses of ceramics. *Ans.* : ★ Electronic gadgetry $\frac{1}{2}$ ★ Ball bearings $\frac{1}{2}$ ★ Spare parts of engines $\frac{1}{2}$ ★ Synthetic teeth ★ Synthetic bones (any four) $\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
49.	The electronic configuration of four elements is given in the following table :	

Element	*Electronic Configuration*
A	$1s^2 2s^2 2p^6 3s^1$
B	$1s^2 2s^2 2p^4$
C	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
D	$1s^2 2s^2 2p^6 3s^2$

(a) Which element has greatest atomic size in these elements ? Why ?

(b) Among these elements, the element having least atomic size, belongs to which period ? Why ?

Ans. :

a) 'C' element has greater atomic size. $\frac{1}{2}$

Because, it has more number (4) of shells. 1

b) It belongs to 2nd period.

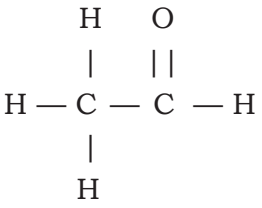
(The element 'B' has least atomic radius as the number of shells is less) $\frac{1}{2}$

Because, the electronic configuration of the element 'B' is ended in 2nd shell. 1 3

51. (a) What are functional groups ? Write the structural formula of the compound obtained when one atom of hydrogen in 'Ethane' is replaced by — CHO group.

(b) Write the balanced chemical equations for the four chemical reactions occurring when the mixture of methane and chlorine is exposed to ultraviolet light, till the production of tetrachloromethane.

OR

Qn. Nos.	Value Points	Total
	(a) Explain the preparation of methane with chemical equation. Name the products formed when methane completely burns in oxygen. (b) Oils have very little shelf life. What is the reason ? *Ans.* : (a) The specific groups of atoms or bonds within molecules that are responsible for the characteristic chemical reactions of those molecules. 1  1 (b) $CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$ $\frac{1}{2}$ $CH_3Cl + Cl_2 \rightarrow CH_2Cl_2 + HCl$ $\frac{1}{2}$ $CH_2Cl_2 + Cl_2 \rightarrow CHCl_3 + HCl$ $\frac{1}{2}$ $CHCl_3 + Cl_2 \rightarrow CCl_4 + HCl$ $\frac{1}{2}$ *OR* (a) When a mixture of sodium acetate and sodalime is heated in a hard glass test tube, methane gas is formed. 1 $CH_3COONa + NaOH \xrightarrow{CaO} Na_2CO_3 + CH_4 \uparrow$ 1 Carbon dioxide (CO_2) $\frac{1}{2}$ Water (H_2O) $\frac{1}{2}$ (b) Unsaturated, chemically reactive, $\frac{1}{2}$ They oxidise in air. (any *two*) $\frac{1}{2}$	4 4