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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, MARCH/APRIL, 2020

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 30. 03. 2020] ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Chem.)**

Date : 30. 03. 2020] **CODE NO. : 83-E (Chem.)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ರಸಾಯನಶಾಸ್ತ್ರ / **Chemistry**)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಶಾಲಾ ಅಭ್ಯರ್ಥಿ & ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Fresh & Regular Repeater)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

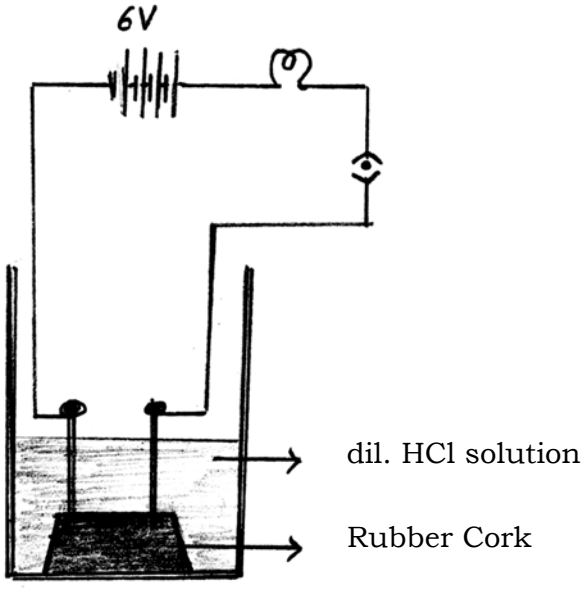
[ಗರಿಷ್ಠ ಅಂಕಗಳು : **80**

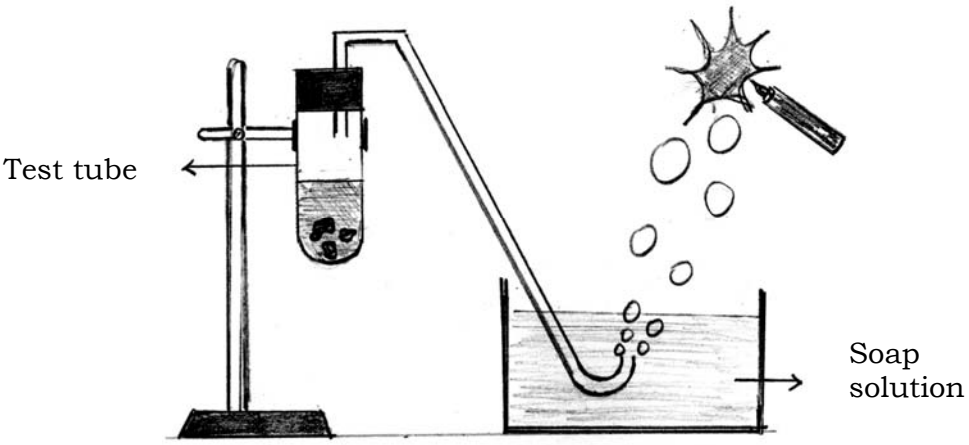
[Max. Marks : 80

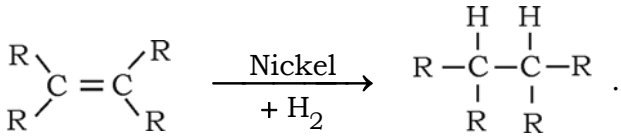
Qn. Nos.	Value Points	Total
2.	As the pH value of a neutral solution increases (A) basic property decreases and number of OH^- ions increases (B) acidic property increases and number of H^+ ions decreases (C) basic property increases and number of OH^- ions increases (D) acidic property decreases and number of H^+ ions increases. *Ans.* : (C) basic property increases and number of OH^- ions increases	1
6.	An example for saturated hydrocarbon is (A) C_2H_6 (B) C_3H_4 (C) C_2H_2 (D) C_2H_4. Ans. : (A) C_2H_6	1

Qn. Nos.	Value Points	Total
8.	The molecular formula of three carbon compounds which are in homologous series are C_2H_6, C_3H_8, C_4H_{10}. The suitable general formula for these compounds is (A) C_nH_{2n} (B) C_nH_{2n-1} (C) C_nH_{2n-2} (D) C_nH_{2n+2}. *Ans.* : (D) C_nH_{2n+2}.	1
9.	An iron ring is to be coated with copper. How can we do this without using electricity ? *Ans.* : ★ Iron ring should be dipped in copper sulphate solution. Iron displaces copper from copper sulphate solution and copper is coated on iron ring. $\frac{1}{2}+\frac{1}{2}$	1
12.	Sodium and potassium are placed in the same group of modern periodic table. If the molecular formula of sodium sulphate is Na_2SO_4, then decide the molecular formula of potassium sulphate. Give reason for your answer. *Ans.* : ★ Molecular formula of potassium sulphate is K_2SO_4. $\frac{1}{2}$ ★ Because both sodium and potassium have same number of valence electrons. $\frac{1}{2}$	1
15.	$CuO + H_2 \rightarrow Cu + H_2O$ In this reaction name the reactant i) that is oxidised ii) that is reduced. *Ans.* : i) Hydrogen or H_2 $\frac{1}{2}$ ii) Copper Oxide or CuO. $\frac{1}{2}$	1

Qn. Nos.	Value Points	Total
17.	Agricultural scientists have suggested to add a certain amount of lime powder to an agricultural field. What may be the reasons for this ? Explain. *Ans.* : ★ Plants require a specific pH range for their healthy growth. $\frac{1}{2}$ ★ Soil of his land is acidic. $\frac{1}{2}$ ★ Lime powder is a base. $\frac{1}{2}$ ★ So adding lime powder to the soil, decreases the acidic property / soil is neutralised. $\frac{1}{2}$	2
19.	Draw the diagram of the apparatus to show that acid solution in water conducts electricity. Label the following parts : i) Dil. HCl solution ii) Rubber cork. OR Draw the diagram of arrangement of the apparatus to show the reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning. Label the following parts : i) Test tube ii) Soap solution. *Ans.* :	



Qn. Nos.	Value Points	Total
	Figure — $1\frac{1}{2}$ Parts — $\frac{1}{2}$ OR  	2
22.	Which physical properties are used in the following situations ? i) Gold is used to make ornaments ii) Nickel is used in strings of guitar. *Ans.* : i) ★ Shining surface / Metallic lustre ★ Ductility ★ Malleability (Any *two*) $\frac{1}{2}+\frac{1}{2}$ ii) ★ Sonorous ★ Ductility. $\frac{1}{2}+\frac{1}{2}$	2
26.	The reaction of Barium chloride with Aluminium sulphate solution is an example for which type of chemical reaction ? Why ? Write the balanced chemical equation for this reaction. *Ans.* : ★ It is an example for double displacement reaction. / Precipitation reaction. 1 ★ There is an exchange of ions between the reactants. / White precipitate of Barium Sulphate is formed. 1 ★ $3BaCl_2 + Al_2(SO_4)_3 \rightarrow 3BaSO_4 + 2AlCl_3$. 1	3

Qn. Nos.	Value Points	Total
28.	Explain the addition and substitution reaction with the help of examples. C_2H_6 undergoes substitution reaction but not addition reaction. Why ? OR Explain how soap cleans clothes. More amount of soap is required to clean the clothes in hard water. Why ? *Ans.* : ★ Unsaturated hydrocarbons combine with hydrogen atoms in the presence of catalysts to give saturated hydrocarbons. $\frac{1}{2}$ ★ Example : Hydrogenation of vegetable oil. Or addition reactions of alkenes / alkynes. Or  . $\frac{1}{2}$ ★ In the presence of sunlight other group of atoms can replace hydrogen atoms one by one from carbon compounds. $\frac{1}{2}$ ★ Example : In the presence of sunlight Chlorine replaces hydrogen atoms one by one from methane. Methane + Chlorine → Chloromethane + Hydrogen chloride OR $CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$. $\frac{1}{2}$ ★ C_2H_6 is saturated hydrocarbon. OR $\frac{1}{2}$ ★ In C_2H_6 there will be single bond between carbon atoms / This is not an unsaturated compound. No hydrogen atoms can be added but hydrogen atoms can be substituted. $\frac{1}{2}$ OR	3

Qn. Nos.	Value Points	Total
	★ The molecules of soap are sodium or potassium salts of long chain carboxylic acids. ★ The ionic end of soap interacts with water while the carbon chain interacts with oil. ★ The soap molecules thus form structure called micells. This forms an emulsion in water. ★ The soap micelles thus helps in pulling out the dirt in water and we can wash our clothes clean. $\frac{1}{2} \times 4$ ★ The reaction of soap with calcium and magnesium salts in hard water develop scum (precipitation, insoluble substance). Hence we need large amount of soap to clean clothes in hard water. 1	3
33.	The atomic numbers of two elements are 8 and 16 respectively. Write the electronic configuration of these two elements. Do you keep these two elements in the same group of the modern periodic table ? Justify your answer. Find out which of these two elements is more electronegative. Give reason for your answer. *Ans.* : ★ Atomic number 8 — 2, 6 $\frac{1}{2}$ ★ Atomic number 16 — 2, 8, 6 $\frac{1}{2}$ ★ Yes, these two elements belong to the same group. $\frac{1}{2}$ ★ Because in the outer most shell they have same number of electrons or both have same number of valance electrons. $\frac{1}{2}$ ★ Element with atomic number 8 is more electronegative than the element with atomic number 16. $\frac{1}{2}$ ★ Electronegativity decreases down the group. $\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
35.	Mention the difference between calcination and roasting. How these processes are used in the extraction of zinc ? Explain with the help of chemical equations. After these processes is reduction necessary to obtain zinc ? Why ? *Ans.* : ★ Carbonate ores are converted into oxides by heating strongly in *limited* air. This process is known as calcination. $\frac{1}{2}$ ★ Sulphide ores are converted into oxides by heating strongly in the presence of excess of air. This process is known as roasting. $\frac{1}{2}$ ★ When $ZnCO_3$ undergoes calcination ZnO is formed. $ZnCO_3\ (s) \xrightarrow{\text{heat}} ZnO\ (s) + CO_2\ (g)$. 1 ★ When ZnS undergoes roasting, ZnO is formed. $2\ ZnS\ (s) + 3O_2\ (g) \xrightarrow{\text{heat}} 2\ ZnO\ (s) + 2\ SO_2\ (g)$. 1 ★ After these processes reduction is necessary. $\frac{1}{2}$ ★ Because zinc oxide is then reduced to zinc using suitable reducing agent. $\frac{1}{2}$	4