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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 — 2020

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)

(ಹಳೆ ಪಠ್ಯಕ್ರಮ / Old Syllabus)

(ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

[ಗರಿಷ್ಠ ಅಂಕಗಳು : 100

[Max. Marks : 100

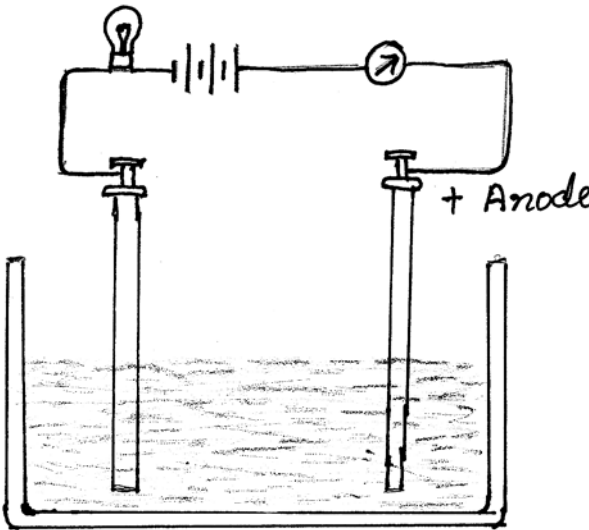
Qn. Nos.	Value Points	Total
1.	During the evaporation of cleaned sugarcane juice, the reason to reduce the pressure surrounding it is, to (A) increase the boiling point of sugarcane juice (B) decolourise the sugar (C) decrease the boiling point of sugarcane juice (D) increase the size of the sugar crystals. Ans. : (C) decrease the boiling point of sugarcane juice	1
4.	Sodium chloride in its aqueous solution is a strong electrolyte, because it (A) dissociates completely (B) is a covalent compound (C) does not dissociate (B) dissociates incompletely. Ans. : (A) dissociates completely	1

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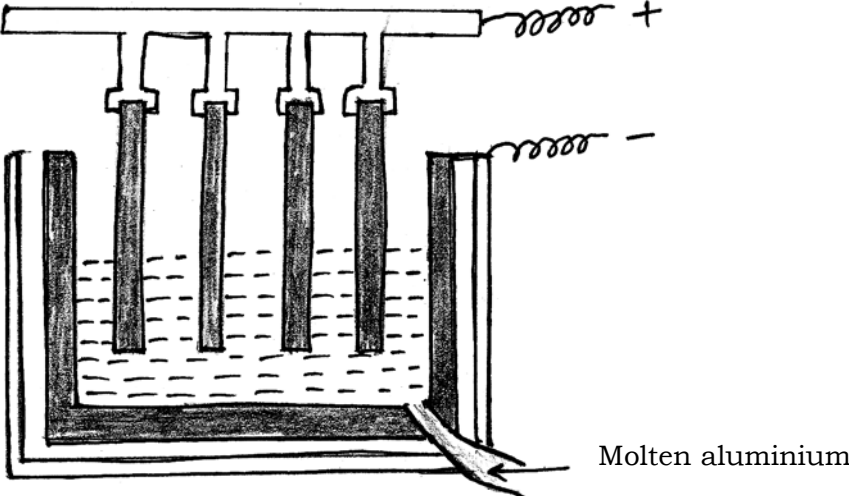
[Turn over

Qn. Nos.	Value Points	Total																															
9.	<p>The hydrocarbon that undergoes hydrogenation among the following is</p> <p>(A) CH_4 (B) C_2H_6</p> <p>(C) C_2H_2 (D) C_3H_8.</p> <p>Ans. :</p> <p>(C) C_2H_2</p>	1																															
11.	<p>Match the names of organic compounds given in Column-A with their molecular formula given in Column-B and write the answer along with its letters : $4 \times 1 = 4$</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left;">Column-A</th> <th style="text-align: left;">Column-B</th> </tr> </thead> <tbody> <tr> <td>(A) Propane</td> <td>(i) C_4H_8</td> </tr> <tr> <td>(B) Butene</td> <td>(ii) C_4H_{10}</td> </tr> <tr> <td>(C) Cyclohexane</td> <td>(iii) C_6H_6</td> </tr> <tr> <td>(D) Propyne</td> <td>(iv) C_3H_8</td> </tr> <tr> <td></td> <td>(v) C_6H_{12}</td> </tr> <tr> <td></td> <td>(vi) C_4H_6</td> </tr> <tr> <td></td> <td>(vii) C_3H_4.</td> </tr> </tbody> </table> <p>Ans. :</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left;">Column-A</th> <th style="text-align: left;">Column-B</th> <th></th> </tr> </thead> <tbody> <tr> <td>(A) Propane</td> <td>(iv) C_3H_8</td> <td>1</td> </tr> <tr> <td>(B) Butene</td> <td>(i) C_4H_8</td> <td>1</td> </tr> <tr> <td>(C) Cyclohexane</td> <td>(v) C_6H_{12}</td> <td>1</td> </tr> <tr> <td>(D) Propyne</td> <td>(vii) C_3H_4</td> <td>1</td> </tr> </tbody> </table>	Column-A	Column-B	(A) Propane	(i) C_4H_8	(B) Butene	(ii) C_4H_{10}	(C) Cyclohexane	(iii) C_6H_6	(D) Propyne	(iv) C_3H_8		(v) C_6H_{12}		(vi) C_4H_6		(vii) C_3H_4 .	Column-A	Column-B		(A) Propane	(iv) C_3H_8	1	(B) Butene	(i) C_4H_8	1	(C) Cyclohexane	(v) C_6H_{12}	1	(D) Propyne	(vii) C_3H_4	1	4
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13.	<p>What is catenation ?</p> <p>Ans. :</p> <p>The unique ability of carbon atom to form co-valent bonds with other atoms of carbon, giving rise to large molecule of chain of ring structure.</p>	1																															

Qn. Nos.	Value Points	Total
21.	<p>Explain the method of extraction of crystalline silicon. Write the balanced chemical equation of the reaction taking place in this process.</p> <p style="text-align: center;">OR</p> <p>Write balanced chemical equations for the following chemical reactions :</p> <p>a) Reaction of amorphous silicon with steam</p> <p>b) Reaction of amorphous silicon with oxygen.</p> <p>Ans. :</p> <p>★ Crystalline silicon is obtained by reducing silica with coke. 1/2</p> <p>★ When excess of silica is heated with coke in the electric furnace in the absence of air, dark grey coloured silicon is obtained in its crystalline form. 1/2</p> $\text{SiO}_2 + 2\text{C} \xrightarrow{\text{Heat}} \text{Si} + 2\text{CO} \uparrow$ <p style="text-align: center;">OR</p> <p>a) With steam</p> $\begin{array}{ccccccc} \text{Si} & + & 2\text{H}_2\text{O} & \longrightarrow & \text{SiO}_2 & + & 2\text{H}_2 \uparrow \\ \text{Silicon} & & \text{Steam} & & \text{Silicon} & & \text{Hydrogen} \\ & & & & \text{dioxide} & & \end{array}$ <p>b) With oxygen</p> $\begin{array}{ccccccc} \text{Si} & + & \text{O}_2 & \longrightarrow & \text{SiO}_2 & & \\ \text{Silicon} & & \text{Oxygen} & & \text{Silicon} & & \\ & & & & \text{dioxide} & & \end{array}$	2
24.	<p>Draw the diagram of the apparatus showing electrolysis and label anode.</p> <p>Ans. :</p>	2

Qn. Nos.	Value Points	Total
27.	 <p data-bbox="917 862 1316 996">Figure — $1\frac{1}{2}$ Labelling — $\frac{1}{2}$</p>	2
	<p data-bbox="255 1019 1324 1108">What is fermentation ? Write the three steps involved in the fermentation of molasses.</p> <p data-bbox="766 1120 821 1153" style="text-align: center;">OR</p> <p data-bbox="255 1176 1324 1265">What are the two main sources of sucrose ? Name the two monosaccharides in sucrose molecule.</p> <p data-bbox="255 1288 343 1321"><i>Ans. :</i></p> <p data-bbox="255 1344 1324 1433">Fermentation is a chemical decomposition produced by micro organisms of certain organic matters. $\frac{1}{2}$</p> <p data-bbox="255 1467 359 1500"><i>Steps :</i></p> <ul style="list-style-type: none"> <li data-bbox="255 1523 1324 1612">★ Dilution of molasses by water such that the solution contains about 10% sugar. $\frac{1}{2}$ <li data-bbox="255 1635 1324 1724">★ Addition of yeast and maintaining the temperature range of 308 K to 313 K. $\frac{1}{2}$ <li data-bbox="255 1747 1324 1803">★ Distillation of fermented matter. $\frac{1}{2}$ <p data-bbox="766 1836 821 1870" style="text-align: center;">OR</p> <ul style="list-style-type: none"> <li data-bbox="255 1892 1324 1937">★ The main sources of sucrose are, 2 	2

Qn. Nos.	Value Points	Total
	— Cane sugar	$\frac{1}{2}$
	— Beet root sugar	$\frac{1}{2}$
	★ The two monosaccharides of sucrose molecule are,	
	— Glucose	$\frac{1}{2}$
	— Fructose.	$\frac{1}{2}$
30.	<p>4l of a gas is enclosed in a vessel at 4×10^5 Pa pressure. It is allowed to expand to 8l under constant temperature. Find the final pressure of the gas in the vessel.</p> <p>Ans. :</p> <p>$V_1 = 4l$</p> <p>$V_2 = 8l$</p> <p>$P_1 = 4 \times 10^5$ Pa</p> <p>$P_2 = ?$</p> <p>According to Boyle's law,</p> <p>$P_1V_1 = P_2V_2$</p> <p>$P_2 = \frac{P_1V_1}{V_2}$</p> <p>$= \frac{4 \times 10^5 \times 4}{8}$</p> <p>$P_2 = 2 \times 10^5$ Pa.</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p>
32.	<p>Draw the diagram of the apparatus used in the extraction of aluminium from alumina and label molten aluminium.</p> <p>Ans. :</p>	2

Qn. Nos.	Value Points	Total
	 <p data-bbox="917 851 1308 963">Figure — $1\frac{1}{2}$ Labelling — $\frac{1}{2}$</p>	2
34.	<p data-bbox="263 996 1324 1086">Explain the method of preparation of safety glass and mention its important property.</p> <p data-bbox="263 1097 343 1131"><i>Ans. :</i></p> <ul style="list-style-type: none"> <li data-bbox="263 1153 1324 1288">★ Safety glass is made by sandwiching thin layer of synthetic vinyl plastic in between two or three flat sheets of glass and then it is subjected to slight pressure. $\frac{1}{2}$ <li data-bbox="263 1310 1324 1400">★ It is then heated till the glass layers and plastic layers merge into one another. $\frac{1}{2}$ <li data-bbox="263 1422 1324 1489">★ On cooling the glass becomes quite tough. $\frac{1}{2}$ <li data-bbox="263 1500 1324 1590">★ When such glass breaks, it does not fly into pieces as the inner plastic layer tends to hold back the broken pieces of the glass. $\frac{1}{2}$ 	2
36.	<p data-bbox="263 1624 861 1657">What are metalloids ? Give two examples.</p> <p data-bbox="263 1668 343 1702"><i>Ans. :</i></p> <p data-bbox="263 1724 1324 1814">Elements which are not distinctively metals and possess some physical properties of non-metals are called metalloids. 1</p> <p data-bbox="335 1825 1324 1881"><i>Ex. :</i> Germanium $\frac{1}{2}$</p> <p data-bbox="430 1892 1324 1948">Gallium $\frac{1}{2}$</p>	2

Qn. Nos.	Value Points	Total										
39.	<p>The molecular formula of four compounds are KOH, CH₃OH, NaOH and C₂H₅OH. Classify these into alcohols and bases. Justify your classification with suitable reasons.</p> <p><i>Ans. :</i></p> <p><i>Alcohols :</i> CH₃OH, C₂H₅OH 1/2</p> <p><i>Bases :</i> KOH, NaOH 1/2</p> <p>CH₃OH and C₂H₅OH are co-valent compounds and have -OH functional group. 1/2</p> <p>KOH and NaOH are ionic compounds and have OH⁻ ions. 1/2</p>	2										
42.	<p>Write the difference between calcination and roasting.</p> <p><i>Ans. :</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Calcination</i></th> <th style="text-align: center;"><i>Roasting</i></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Calcination is the process of heating the ore just below its melting point in the absence of air with a purpose of driving away matter like water and carbon dioxide.</td> <td style="padding: 5px;">Roasting is a process of heating the ore just below its melting point in the presence of air.</td> </tr> </tbody> </table> <p style="text-align: right;">1 + 1</p>	<i>Calcination</i>	<i>Roasting</i>	Calcination is the process of heating the ore just below its melting point in the absence of air with a purpose of driving away matter like water and carbon dioxide.	Roasting is a process of heating the ore just below its melting point in the presence of air.	2						
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48.	<p>Observe the following table :</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Element</i></th> <th style="text-align: center;">A</th> <th style="text-align: center;">B</th> <th style="text-align: center;">C</th> <th style="text-align: center;">D</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><i>Atomic Number</i></td> <td style="text-align: center;">12</td> <td style="text-align: center;">2</td> <td style="text-align: center;">16</td> <td style="text-align: center;">20</td> </tr> </tbody> </table> <p>Identify the element,</p> <p>a) which is a noble gas</p> <p>b) having highest atomic size</p> <p>c) having highest ionisation energy .</p> <p>Give suitable reason for your answer.</p> <p><i>Ans. :</i></p>	<i>Element</i>	A	B	C	D	<i>Atomic Number</i>	12	2	16	20	
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Qn. Nos.	Value Points	Total
	a) <i>B</i> is the noble gas element because, its valency is zero. $\frac{1}{2} + \frac{1}{2}$ b) <i>D</i> has the highest atomic size, because $\frac{1}{2}$ ★ the atomic size increases down the group OR ★ the number of shells increase down the group. (Any one point) $\frac{1}{2}$ c) <i>C</i> has highest ionisation energy, because $\frac{1}{2}$ ★ ionisation energy increases across a period OR ★ the nuclear pull on the electrons increases across a period. (Any one point) $\frac{1}{2}$	3
51.	a) List any four physical properties of metals. b) What are alloys ? Mention two uses of stainless steel. Ans. : a) ★ Solids at room temperature ★ Sonorous ★ Generally malleable and ductile ★ Generally conduct electricity ★ Generally conduct heat ★ Lustrous. (Any four points) $4 \times \frac{1}{2}$ b) An alloy is a homoeneous mixture of two or more metals or metals with non-metals. 1 Stainless steel is used in manufacture of surgical instruments and utensils. 1	4