THE AIR FORCE SCHOOL, SUBROTO PARK

CATALYST : EXCLUSIVELY FOR CLASS X AND XII

DECODING CBSE SAMPLE PAPER- 2022-23

(CHEMISTRY)

UNIT -WISE WEIGHTAGE

COURSE STRUCTURE: CLASS X

(Annual Examination)

Marks: 80

Unit No.	Unit	Marks	Periods
I	Chemical Substances-Nature and Behaviour	25	55
II	World of Living	23	50
III	Natural Phenomena	12	23
IV	Effects of Current	13	32
V	Natural Resources	07	20
	Total	80	
	Internal assessment	20	
	Grand Total	100	

WEIGHTAGE

CHAPTER S COVERED in UNIT -I	APP. WEIGHTAGE
CHEMICAL REACTIONS ND EQUATIONS	6 Marks
ACIDS, BASES AND SALTS	7 Marks
METALS AND NON METALS	6 Marks
CARBON AND ITS COMPOUNDS	6 Marks
TOTAL	25 MARKS

UNIT –I (CONTENT)
CHEMICAL REACTIONS AND EQUATONS

Chemical Substances - Nature and Behavior

Chemical reactions: Chemical equation, Balanced chemical equation, implications of a balanced chemical equation, types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, endothermic exothermic reactions, oxidation and reduction.

UNIT –I (CONTENT)

ACIDS, BASES AND SALTS

Acids, bases and salts: Their definitions in terms of furnishing of H+ and OH– ions, General properties, examples and uses, neutralization, concept of pH scale (Definition relating to logarithm not required), importance of pH in everyday life; preparation and uses of Sodium Hydroxide, Bleaching powder, Baking soda, Washing soda and Plaster of Paris.

UNIT –I (CONTENT)
METALS AND NON - METALS

Metals and nonmetals: Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds; Basic metallurgical processes; Corrosion and its prevention.

UNIT –I (CONTENT)

CARBON AND ITS COMPOUNDS

- **Carbon compounds: Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series. Nomenclature of carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes, alkanes and alkynes), difference between saturated hydro carbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps and detergents.**

QUESTION PAPER DESIGN
SCIENCE

COMPETENCIES	TOTAL
Demonstrate Knowledge and Understanding (State, name, list, identify, define, suggest, describe, outline, summarize, etc.)	46 %
Application of Knowledge/Concepts (Calculate, illustrate, show, adapt, explain, distinguish, etc.)	22 %
Formulate, Analyze, Evaluate and Create (Interpret, analyze, compare, contrast, examine, evaluate, discuss, construct, etc)	32 %
	100%

TYPOLOGY OF QUESTIONS IN SAMPLE PAPER

- VSA (Very Short Answer Questions) including objective type questions,
- Assertion – Reasoning type questions;
- SA (Short answer Questions); LA (Long Answer questions); Source-based/ Case-based/ Passage-based/ Integrated assessment questions.
- An internal choice of approximately 33% would be provided.

GENERAL INSTRUCTIONS

- **Max. Marks: 80**
- **Time Allowed: 3 hours**
- **The question paper consists of 39 questions in 5 sections.**
- **All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.**
- **Section A consists of 20 objective-type questions carrying 1 mark each.**
- **Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.**
- **Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words**
- **Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.**
- **Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.**

SECTION -A

The change in colour of the moist litmus paper in the given set-up is due to

i. presence of acid

ii. presence of base

iii. presence of $H^+(aq)$ in the solution

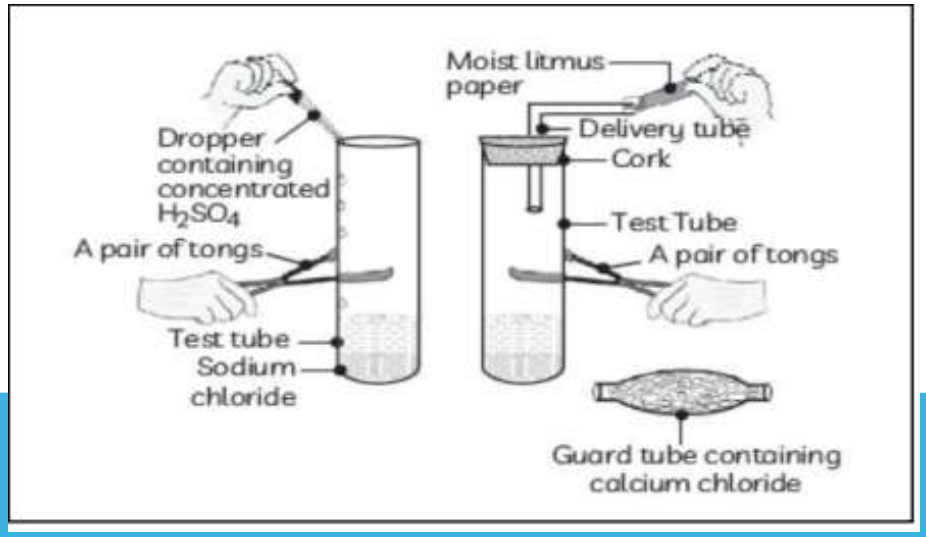
iv. presence of Litmus which acts as an indicator

(a) i and ii

(b) Only ii

(c) Only iii

(d) Only iv.



SECTION -A

In the redox reaction

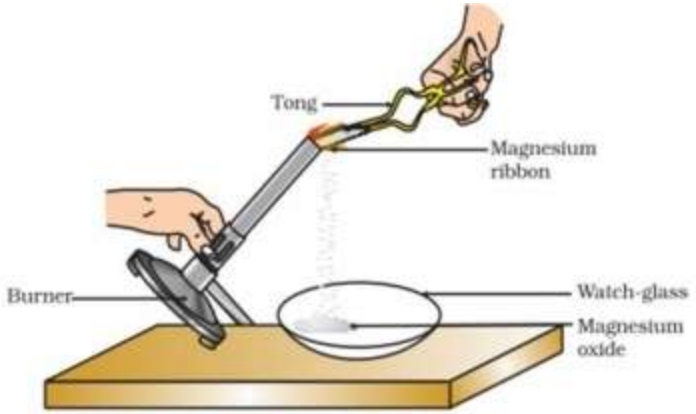
$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

(a) MnO_2 is reduced to $MnCl_2$ & HCl is oxidized to H_2O
(b) MnO_2 is reduced to $MnCl_2$ & HCl is oxidized to Cl_2
(c) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to Cl_2
(d) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to H_2O

SECTION -A

Which of the following is the correct observation of the reaction shown in the above set up?

(a) Brown powder of Magnesium oxide is formed.
(b) Colourless gas which turns lime water milky is evolved.
(c) Magnesium ribbon burns with brilliant white light.
(d) Reddish brown gas with a smell of burning Sulphur has evolved



SECTION -A

On placing a copper coin in a test tube containing green ferrous sulphate solution, it will be observed that the ferrous sulphate solution

(a) turns blue, and a grey substance is deposited on the copper coin.
(b) turns colourless and a grey substance is deposited on the copper coin.
(c) turns colourless and a reddish–brown substance is deposited on the copper coin.
(d) remains green with no change in the copper coin.

SECTION -A

With the reference to four gases CO_2, CO, Cl_2 and O_2, which one of the options in the table is correct?

Option	Acidic oxide	Used in treatment of water	Product of respiration	Product of incomplete combustion
(a)	CO	Cl_2	O_2	CO
(b)	CO_2	Cl_2	CO_2	CO
(c)	CO_2	O_2	O_2	CO_2
(d)	CO	O_2	CO_2	CO_2

SECTION -A

Anita added a drop each of diluted acetic acid and diluted hydrochloric acid on pH paper and compared the colors. Which of the following is the correct conclusion?

(a) pH of acetic acid is more than that of hydrochloric acid.
(b) pH of acetic acid is less than that of hydrochloric acid.
(c) Acetic acid dissociates completely in aqueous solution.
(d) Acetic acid is a strong acid

SECTION -A

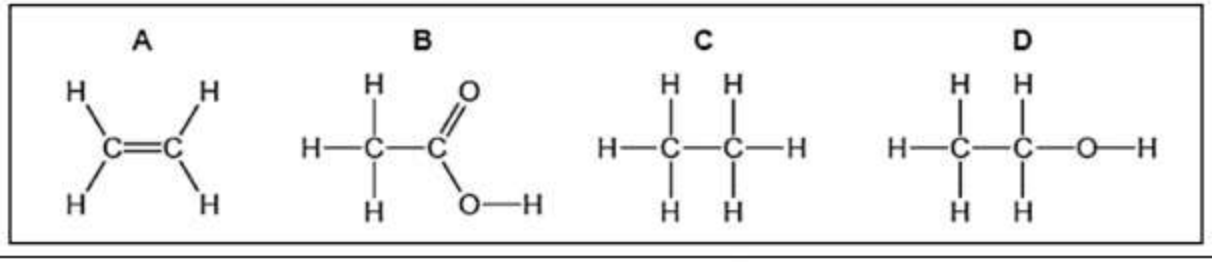
The formulae of four organic compounds are shown below. Choose the correct option

(a) A and B are unsaturated hydrocarbons

(b) C and D are saturated hydrocarbons

(c) Addition of hydrogen in presence of catalyst changes A to C

(d) Addition of potassium permanganate changes B to D



ASSERTION REASONING

These consist of two statements – Assertion (A) and Reason (R).
Answer these questions by selecting the
appropriate option is given below:
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true and R is not the correct explanation of A
(c) A is true but R is false
(d) A is False but R is true

Assertion: Silver bromide decomposition is used in black and white photography.
Reason: Light provides energy for this exothermic reaction.

VERY SHORT ANSWER QUESTIONS (2 MARKS)

A clear solution of slaked lime is made by dissolving Ca(OH)2in an excess of water. This solution is left exposed to air. The solution slowly goes milky as a faint white precipitate forms. Explain why a faint white precipitate forms, support your response with the help of a chemical equation.

OR

Keerti added dilute Hydrochloric acid to four metals and recorded her observations as shown in the table given below:

Select the correct observation(s) and give chemical equation(s) of the reaction involves.

METAL	GAS EVOLVED
COPPER	YES
MAGNESIUM	YES
IRON	NO
ZINC	YES

SHORT ANSWER QUESTIONS
(3 MARKS)

Identify the types of reaction mentioned above in (i) and (ii). Give one example for each type in the form of a balanced chemical equation.

i)

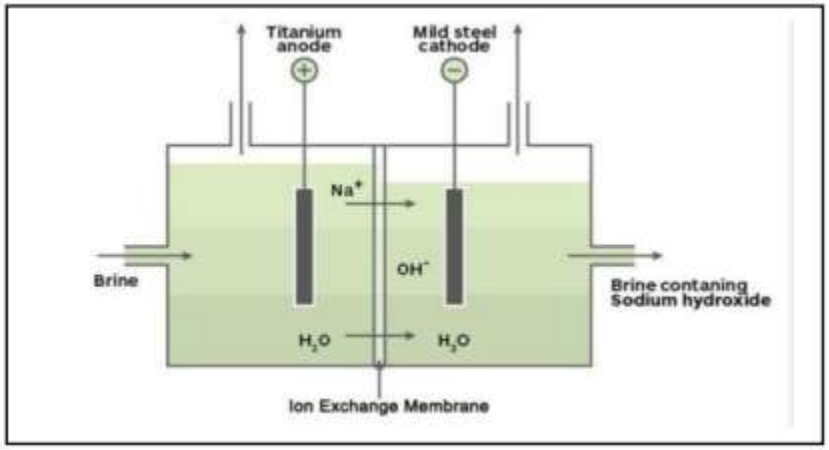
ii)

SHORT ANSWER QUESTIONS (3 MARKS)

(a) Identify the gasses evolved at the anode and cathode in the above experimental set up.

(b) Name the process that occurs. Why is it called so?

(c) Illustrate the reaction of the process with the help of a chemical equation.



LONG ANSWER QUESTIONS (5 MARKS)

Shristi heated Ethanol with a compound A in presence of a few drops of concentrated sulphuric acid and observed a sweet smelling compound B is formed. When B is treated with sodium hydroxide it gives back Ethanol and a compound C.

(a) Identify A and C

(b) Give one use each of compounds A and B.

(c) Write the chemical reactions involved and name the reactions.

OR

(a) What is the role of concentrated Sulphuric acid when it is heated with Ethanol at 443 K. Give the reaction involved.

(b) Reshu by mistake forgot to label the two test tubes containing Ethanol and Ethanoic acid. Suggest an experiment to identify the substances correctly? Illustrate the reactions with the help of chemical equations

CASE-BASED/DATA-BASED QUESTIONS (4 MARKS)

Two students decided to investigate the effect of water and air on iron object under identical experimental conditions. They measured the mass of each object before placing it partially immersed in 10 ml of water. After a few days, the object were removed, dried and their masses were measured. The table shows their results

Student	Object	Mass of Object before Rusting in g	Mass of the coated object in g
A	Nail	3.0	3.15
B	Thin plate	6.0	6.33

CASE-BASED/DATA-BASED QUESTIONS (4 MARKS)

(a) What might be the reason for the varied observations of the two students?

(b)

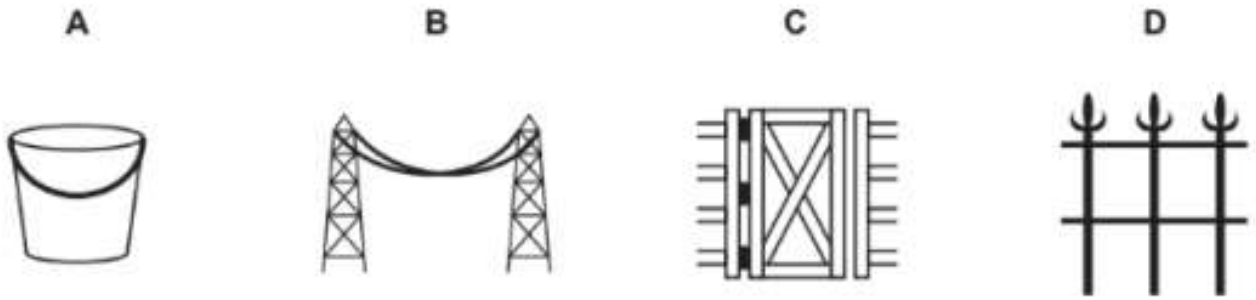
In another set up the students coated iron nails with zinc metal and noted that, iron nails coated with zinc prevents rusting. They also observed that zinc initially acts as a physical barrier, but an extra advantage of using zinc is that it continues to prevent rusting even if the layer of zinc is damaged. Name this process of rust prevention and give any two other methods to prevent rusting

CASE-BASED/DATA-BASED QUESTIONS (4 MARKS)

OR

b) In which of the following applications of Iron, rusting will occur most? Support your answer with a valid reasons.

A – Iron Bucket electroplated with Zinc
B – Electricity cables having iron wires covered with aluminium
C – Iron hinges on a gate
D – Painted iron fence




THANK
YOU