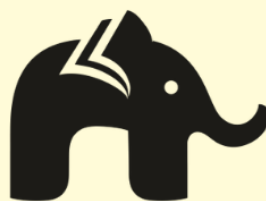


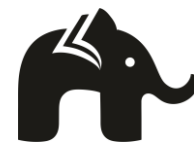


PRACTICE MCQS

CLASS 10 SCIENCE (TERM - I)
**CHEMICAL REACTIONS AND
EQUATIONS**

BY
learn-o-hub
learning simplified



**Question 1:**

Reema took 5 ml of Lead Nitrate solution in a beaker and added approximately 4ml of Potassium Iodide solution to it. What would she observe?

- (a) The solution turned red.
- (b) Yellow precipitate was formed.
- (c) White precipitate was formed.
- (d) The reaction mixture became hot.

Answer: (b) Yellow precipitate was formed.

This is an example of precipitation reaction.



The yellow ppt of lead iodide can be recovered by filtration.

Question 2:

Which of the following correctly represents a balanced chemical equation?

- (a) $\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$
- (b) $3\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$
- (c) $3\text{Fe}(\text{s}) + \text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + \text{H}_2(\text{g})$
- (d) $3\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + \text{H}_2(\text{g})$

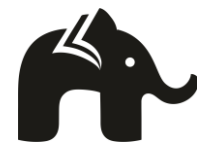
Answer: (b) $3\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$

Question 3:

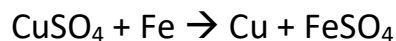
A red brown gas is released along with oxygen and lead oxide on heating lead nitrate. It is an example of

- (a) redox reaction
- (b) displacement reaction
- (c) decomposition reaction
- (d) reduction reaction

Answer: (c) decomposition reaction

**Question 4:**

In the reaction of iron with copper sulphate solution:



Which option in the given table correctly represents the substance oxidised and the reducing agent?

Option	Substance oxidized	Reducing agent
A	Fe	Fe
B	Fe	FeSO ₄
C	Cu	Fe
D	CuSO ₄	Fe

Answer: (a) Fe and Fe respectively.

Substance which is oxidized reduces the other substance.

Hence, substance oxidized is itself a reducing agent.

Question 5:

The chemical reaction between copper and oxygen can be categorized as

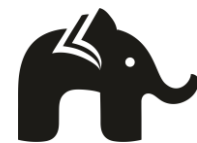
- (a) Displacement reaction
- (b) Decomposition reaction
- (c) Combination reaction
- (d) Double displacement reaction

Answer: (c) Combination reaction

When copper combines with oxygen, the process is known as oxidation.

When copper reacts with oxygen, then it produces copper oxide, a black color compound.



**Question 6:**

Which of the given options correctly represents the parent acid and base of Calcium Carbonate?

Option	Parent Acid	Parent base
(a)	HCl	NaOH
(b)	H ₂ CO ₃	Ca(OH) ₂
(c)	H ₃ PO ₃	CaSO ₄
(d)	H ₂ SO ₄	CaSO ₄

Answer:

(b)	H₂CO₃	Ca(OH)₂
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Question 7:

How will you protect yourself from the heat generated while diluting a concentrated acid?

- (a) By adding acid to water with constant stirring.
- (b) By adding water to acid with constant stirring.
- (c) By adding water to acid followed by base.
- (d) By adding base to acid with constant stirring.

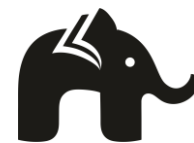
Answer: (a) By adding acid to water with constant stirring.

The process of dissolving an acid or a base in water is a highly exothermic reaction. The acid must always be added slowly to water with constant stirring. If water is added to concentrated acid, the heat generated may cause the mixture to splash out and cause burns.

Question 8:

Why is it important to balance a skeletal chemical equation?

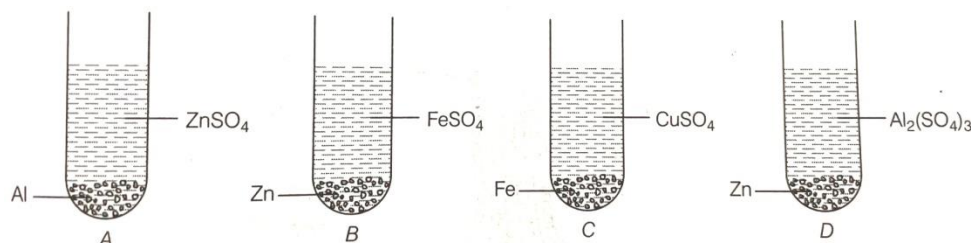
- (a) To verify law of conservation of energy.
- (b) To verify the law of constant proportion.
- (c) To verify the law of conservation of mass.
- (d) To verify the law of conservation of momentum.



Answer: (c) To verify the law of conservation of mass.

Question 9:

Observe the following test tubes, which of the following observations are correct?



- (a) The solution becomes colourless and zinc metal gets deposited.
- (b) The solution becomes colourless and iron metal gets deposited.
- (c) Iron displaces copper from CuSO_4 solution and solution becomes pale green.
- (d) All of the above

Answer: (d) All of the above

Aluminium is more reactive than zinc, it displaces zinc and $\text{Al}_2(\text{SO}_4)_3$ is formed. Similarly, iron gets displaced by zinc. Hence, iron gets deposited and ZnSO_4 is formed.

Reactivity of iron is more than copper and copper get deposited by iron to form FeSO_4 solution.

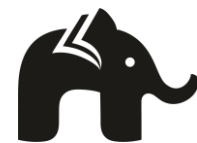
Question 10:

Can we store ZnSO_4 in iron containers?

- (a) We can store because iron is less reactive than Zn.
- (b) We cannot store because iron is more reactive than Zn.
- (c) We cannot store because iron is less reactive than Zn.
- (d) We cannot store because iron is more reactive than Zn.

Answer: (a) We can store because iron is less reactive than Zn.

This is because iron is less reactive than zinc.



Answer: (c) ✓ ✓

When limestone is heated strongly, the calcium carbonate it contains absorbs heat (endothermic reaction) and decomposes to form calcium oxide (endothermic reaction).

Question 13:

Lead acetate solution is treated with dilute hydrochloric acid to form lead chloride and acetic acid solution. Choose the correct balanced equation.

- (a) $(\text{CH}_3\text{COO})_3\text{Pb} (\text{aq}) + 2 \text{HCl} (\text{dil}) \rightarrow \text{PbCl}_2 (\text{aq}) + 2\text{CH}_3\text{COOH} (\text{aq})$
- (b) $(\text{CH}_3\text{COO})_2\text{Pb} (\text{aq}) + 2 \text{HCl} (\text{dil}) \rightarrow \text{PbCl}_2 (\text{aq}) + 2\text{CH}_3\text{COOH} (\text{aq})$
- (c) $(\text{CH}_3\text{CO})_2\text{Pb} (\text{aq}) + 2 \text{HCl} (\text{dil}) \rightarrow \text{PbCl}_3 (\text{aq}) + 2\text{CH}_3\text{COH} (\text{aq})$
- (d) $(\text{CH}_3\text{CO})_3\text{Pb} (\text{aq}) + 2 \text{HCl} (\text{dil}) \rightarrow \text{PbCl} (\text{aq}) + 2\text{CH}_3\text{COOH} (\text{aq})$

Answer: (b) $(\text{CH}_3\text{COO})_2\text{Pb} (\text{aq}) + 2 \text{HCl} (\text{dil}) \rightarrow \text{PbCl}_2 (\text{aq}) + 2\text{CH}_3\text{COOH} (\text{aq})$

This is a double displacement reaction.

Question 14:

2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. The product of the reaction would be

- (a) Na_2ZnO_2
- (b) $\text{Na}(\text{ZnO})_2$
- (c) $\text{Na}_2(\text{ZnO})_2$
- (d) None of the above

Answer: (a) Na_2ZnO_2



Zinc Sodium hydroxide Sodium zincate Hydrogen

Question 15:

We use tin-plated instead of nickel-plated because

- (a) tin is easy to handle
- (b) nickel is very heavy to load



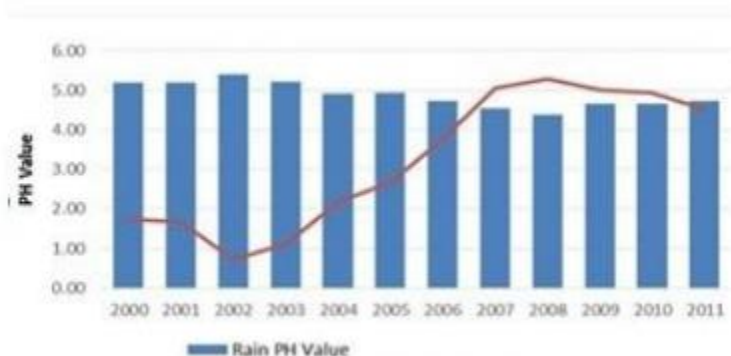
- (c) tin is less toxic
- (d) tin is non-poisonous

Answer: (d) tin is non-poisonous

Tin-plating is preferred because tin is non-poisonous and does not contaminate food kept in it.

Question 16:

In which year is concentration of hydrogen ion the highest?



- (a) 2002
- (b) 2008
- (c) 2011
- (d) 2005

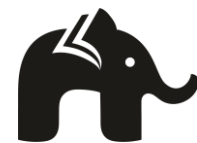
Answer: (a) 2002

Question 17:

Which type of reaction is involved in white wash of walls?

- (a) Displacement reaction
- (b) Combination reaction
- (c) Redox reaction
- (d) Decomposition reaction

Answer: (b) Combination reaction



Reaction of calcium with oxygen gives quicklime (CaO) which combines with water to form slaked lime (Ca(OH)₂) which after putting on the walls, combine with CO₂ of the air to form CaCO₃. This is a type of combination reaction.

Question 18:

What is the formula of rust?

- (a) Fe₃O₂.xH₂O
- (b) Fe₂O₃.xH₂O
- (c) Fe₂O₂.H₂O
- (d) Fe₂xO_x.H₂O

Answer: (b) Fe₂O₃.xH₂O

Formula of rust is Fe₂O₃.xH₂O (hydrated ferric oxide).

Question 19:

Strong heating of ferrous sulphate leads to the formation of a brown solid and two gases. This reaction can be categorized as

- (a) displacement and redox
- (b) decomposition and redox
- (c) displacement and endothermic
- (d) decomposition and exothermic

Answer: (b) decomposition and redox

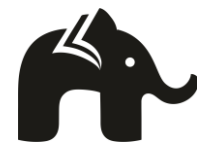
Strong heating of ferrous sulphate lead to the formation of a brown solid.

In decomposition reaction, a single reactant breaks down to form two or more products and in redox reaction, the oxidation and reduction both takes place simultaneously.

Question 20:

Identify the substance oxidized.

- (a) MnCl₂



- (b) HCl
- (c) H₂O
- (d) MnO₂

Answer: (d) MnO₂

In this reaction HCl is oxidised to Cl₂, whereas MnO₂ is reduced to MnCl₂.

Assertion Reason Based Questions

Answer these questions selecting the appropriate option 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

Question 21:

A: Decomposition of vegetable matter into compost is an endothermic reaction.

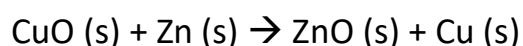
R: Decomposition reaction involves breakdown of a single reactant into simpler products.

Answer: (d) A is False but R is true

Decomposition of vegetable matter into compost is an exothermic reaction.

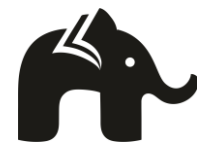
Question 22:

A: Study the chemical equation below:



Zinc is getting oxidised and copper oxide is getting reduced.

R: The process in which oxygen is added to a substance is called oxidation whereas the process in which oxygen is removed from a substance is called reduction.



Answer: (a) Both A and R are true and R is the correct explanation of A

Question 23:

A: The following chemical equation,

$6C_6H_6 + 7/2 O_2 \rightarrow 4 CO_2 + 3H_2O$ is a balanced equation.

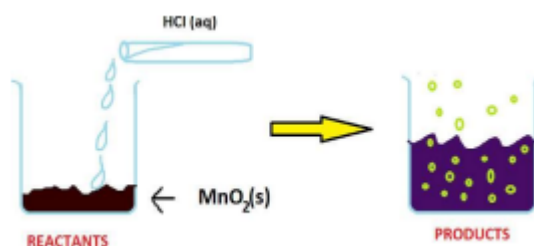
R: In a balanced chemical equation, the total number of atoms of each element is equal on both side of the equation.

Answer: (d) A is false but R is true

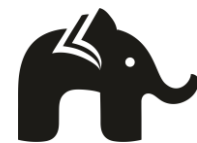
Case Study Based Question

Question 24:

The reaction between MnO_2 with HCl is depicted in the following diagram. It was observed that a gas with bleaching abilities was released.



- The chemical reaction between MnO_2 and HCl is
 - displacement reaction
 - combination reaction
 - redox reaction
 - decomposition reaction.
- Chlorine gas reacts with _____ to form bleaching powder.
 - dry $Ca(OH)_2$
 - dil. solution of $Ca(OH)_2$
 - conc. solution of $Ca(OH)_2$



(d) dry CaO

3. Identify the correct statement from the following: MnO_2 is getting reduced whereas HCl is getting oxidized

(a) MnO_2 is getting oxidized whereas HCl is getting reduced.

(b) MnO_2 and HCl both are getting reduced.

(c) MnO_2 and HCl both are getting oxidized.

4. In the above discussed reaction, what is the nature of MnO_2 ?

(a) Acidic oxide

(b) Basic oxide

(c) Neutral oxide

(d) Amphoteric oxide

5. What will happen if we take dry HCl gas instead of aqueous solution of HCl?

(a) Reaction will occur faster.

(b) Reaction will not occur.

(c) Reaction rate will be slow.

(d) Reaction rate will remain the same.

Answer:

1. (c) redox reaction

2. (a) dry $\text{Ca}(\text{OH})_2$

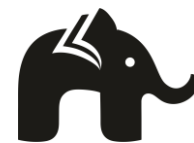
3. (a) MnO_2 is getting reduced whereas HCl is getting oxidized.

4. (b) Basic oxide

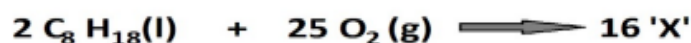
5. (b) Reaction will not occur

Question 25:

Chemistry in Automobiles:



For an internal combustion engine to move a vehicle down the road, it must convert the energy stored in the fuel into mechanical energy to drive the wheels. In your car, the distributor and battery provide this starting energy by creating an electrical "spark", which helps in combustion of fuels like gasoline. Below is the reaction depicting complete combustion of gasoline in full supply of air:



1. Which of the following are the products obtained from the reaction mentioned in the above case?

Product 'X' Product 'Y'

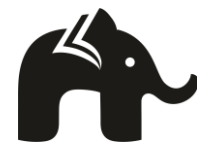
- (a) $\text{CO}_2\text{H}_2\text{O}_2$
- (b) $\text{H}_2\text{O CO}$
- (c) $\text{CH}_3\text{OH H}_2\text{O}$
- (d) $\text{CO}_2\text{H}_2\text{O}$

2. Identify the types of chemical reaction occurring during the combustion of fuel

- (a) Oxidation & Endothermic reaction
- (b) Decomposition & Exothermic reaction
- (c) Oxidation & Exothermic reaction
- (d) Combination & Endothermic reaction

3. On the basis of evolution/absorption of energy, which of the following processes are similar to combustion of fuel?

- (i) Photosynthesis in plants
 - (ii) Respiration in the human body
 - (iii) Decomposition of vegetable matter
 - (iv) Decomposition of ferrous sulphate.
- (a) (ii) & (iii)
 - (b) (i) & (ii)
 - (c) (iii) & (iv)
 - (d) (ii) & (i)



4. 'A student while walking on the road observed that a cloud of black smoke belched out from the exhaust stack of moving trucks on the road.' Choose the correct reason for the production of black smoke:

- (a) Limited supply of air leads to incomplete combustion of fuel.
- (b) Rich supply of air leads to complete combustion of fuel.
- (c) Rich supply of air leads to a combination reaction.
- (d) Limited supply of air leads to complete combustion of fuel.

5. Although nitrogen is the most abundant gas in the atmosphere, it does not combustion'. Identify the correct reason for this statement.

- (a) Nitrogen is a reactive gas
- (b) Nitrogen is an inert gas
- (c) Nitrogen is an explosive gas
- (d) Only hydrocarbons can take part in combustion

Answer:

1. (d) CO_2 , H_2O

2. (c) Oxidation & Exothermic reaction

3. (a) (ii) & (iii)

4. (a) Limited supply of air leads to incomplete combustion of fuel.

The reason for black smoke is the incomplete combustion of the fuel when the supply of air is limited.

5. (b) Nitrogen is an inert gas.

Two nitrogen atoms are combined with each other with three bonds, which makes compound difficult to separate. Hence, it is an inert gas.
