LEVEL-8

CHEMISTRY

REVISION WORKSHEET-1

2019-20

Chemical Reactions
Paper-I

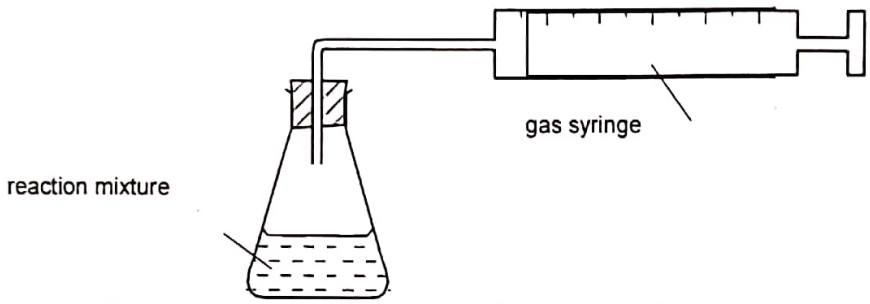
1. The chemical formulae of two substances, W and X, are given.
   W $NaAlSi_3O_8$ **(2016/SP/01)**
   X $CaAl_2Si_2O_8$

   Which statements are correct?

   1. W and X contain the same amount of oxygen.
   2. W contains three times as much silicon as X.
   3. X contains twice as much aluminium as W.

   A 1 and 2 ✓B 1 and 3 C 2 and 3 D 1, 2 and 3

2. The apparatus shown can be used to measure the rate of some chemical reactions.



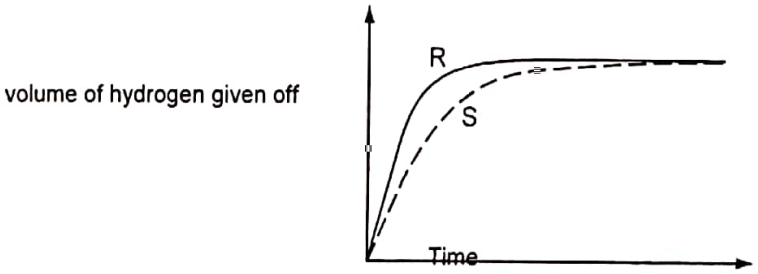
For which two reactions would this apparatus be suitable? **(2016/SP/01)**

reaction 1: $AgNO_3(aq) + HCl(aq) \rightarrow AgCl(s) + HNO_3(aq)$
reaction 2: $2H_2O_2(aq) \rightarrow 2H_2O(l) + O_2(g)$
reaction 3: $MgO(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2O(l)$
reaction 4: $ZnCO_3(s) + 2HCl(aq) \rightarrow ZnCl_2(aq) + CO_2(g) + H_2O(l)$

Reason: Gas is produced in eqn. 2 and 4 only.

A 1 and 2 B 1 and 3 ✓C 2 and 4 D 3 and 4

3. A student investigates the rate of reaction between magnesium and excess sulfuric acid. The volume of hydrogen given off in the reaction is measured over time.
   The graph shows the results of two experiments, R and S.



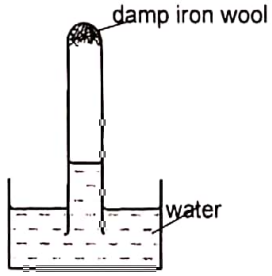
Which change in conditions would cause the difference between R and S? **(2016/SP/01)**

A. Catalyst is added in S.
B. The acid is more concentrated in R than in S.
C. The magnesium is less finely powdered in R than in S.
D. The temperature in R is lower than in S.

4. When pink cobalt(II) chloride crystals are heated they form steam and a blue solid. When water is added to the blue solid, it turns pink and becomes hot. **(2016/SP/01)**
Which terms describe the pink cobalt(II) chloride crystals and the reactions?

	pink cobalt(II) chloride	Reactions
A	aqueous	irreversible
B	anhydrous	reversible
C	hydrated	irreversible
D	hydrated	reversible

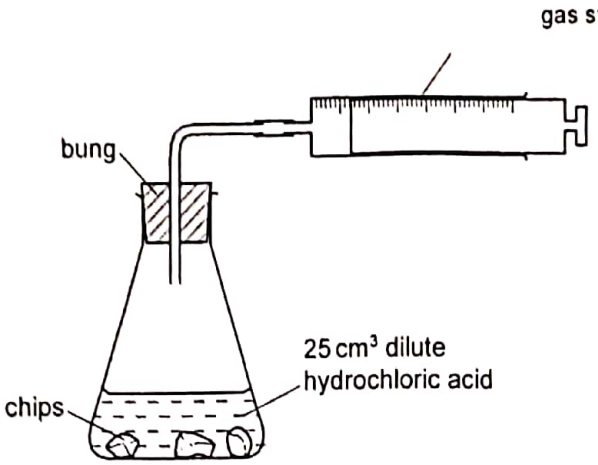
5. A test-tube containing damp iron wool is inverted in water. After three days, the water level inside the test-tube has risen.



Which statement explains this? **(2016/SP/01)**

A Iron oxide has been formed.
B Iron wool has been reduced.
C Oxygen has been formed.
D The temperature of the water has risen.

6. A student uses the apparatus shown in the diagram below to measure the volume of carbondioxide gas made when different masses of marble chips are added to 25cm^3 hydrochloric acid. **(2015-J-11)**



Which other items of apparatus are needed?

A funnel and balance

B funnel and stopwatch

C measuring cylinder and balance

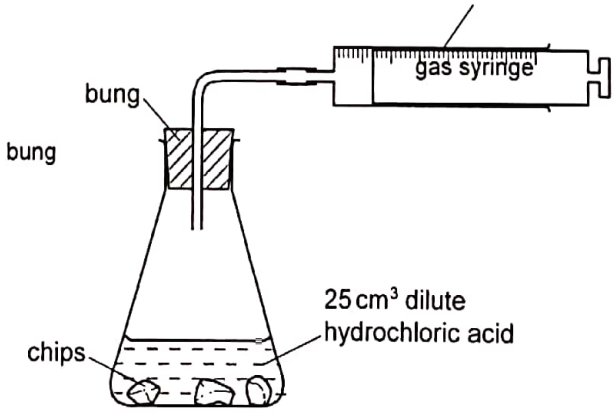
D measuring cylinder and stopwatch

7. A simple way of making bread includes: **(2015-J-12)**

Mixing flour with a small amount of yeast and some water to make a 'dough'. Leaving the dough in a warm place for the yeast to act on the dough to form carbon dioxide which increases the volume of the dough. Which factors affecting a reaction rate are involved in bread making?

	temperature	use of an enzyme
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

8. A student was investigating the reaction between marble chips and dilute hydrochloric acid.



Which changes would reduce the rate of reaction? **(2014-J-12)**

	temperature of acid	concentration of acid	surface area of marble chips
A	decrease	decrease	decrease
B	decrease	decrease	increase
C	increase	decrease	decrease
D	increase	increase	increase

9. Which equation shows an oxidation reaction?

A) $C + O_2 \rightarrow CO_2$

B) $CaCO_3 \rightarrow CaO + CO_2$

C) $CaO + 2HCl \rightarrow CaCl_2 + H_2O$

D) $N_2O_4 \rightarrow 2NO_2$

(2014-J-12)

10. In separate experiments, a catalyst is added to a reaction mixture and the temperature of the mixture is decreased.

What are the effects of these changes on the rate of the reaction? **(2014-J-12)**

	catalyst added	temperature decreased
A	faster	faster
B	faster	slower
C	slower	faster
D	slower	slower

11. The element vanadium, V, forms Several oxides. In

which change is oxidation taking place? **(2015-N-11)**

A) $VO_2 \rightarrow V_2O_3$

B) $V_2O_5 \rightarrow VO_2$

C) $V_2O_3 \rightarrow VO$

D) $V_2O_3 \rightarrow V_2O_5$

16. The equations for two reactions P and Q are given. **(2014-N-11)**

1. $2\underline{NaNO_2} + O_2 \rightarrow 2NaNO_3$
2. $2\underline{HgO} \rightarrow 2Hg + O_2$

In which of these reactions does oxidation of the underlined substance occur?

	P	Q
A	✓	✓
B	✓	X
C	X	✓
D	X	X

17. Which changes decrease the rate of reaction between magnesium and air? **(2014-N-11)**

1. heating the magnesium to a higher temperature
2. using a higher proportion of oxygen in the air
3. using magnesium ribbon instead of powdered magnesium

A) 1, 2 and 3 B) 1 only C) 2 only D) 3 only

18. Which information about an element can be used to predict its chemical properties?

A) boiling point B) density
C) melting point D) position in the Periodic Table **(2014-N-11)**

19. In which equation is the underlined substance acting as a reducing agent?

A) $3\underline{CO} + Fe_2O_3 \rightarrow 2Fe + 3CO_2$

B) $\underline{CO_2} + C \rightarrow 2CO$

C) $\underline{CuO} + H_2 \rightarrow Cu + H_2O$

D) $\underline{CaO} + H_2O \rightarrow Ca(OH)_2$

(2013-J-12)

20. Which change is an oxidation?

A) FeO to Fe_2O_3

B) Fe_2O_3 to FeO

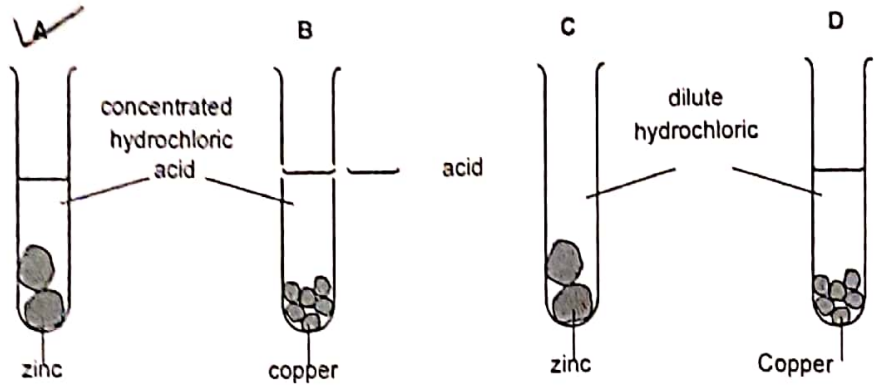
C) H_2O_2 to H_2O

D) H_2O to H_2

(2012-N-11)

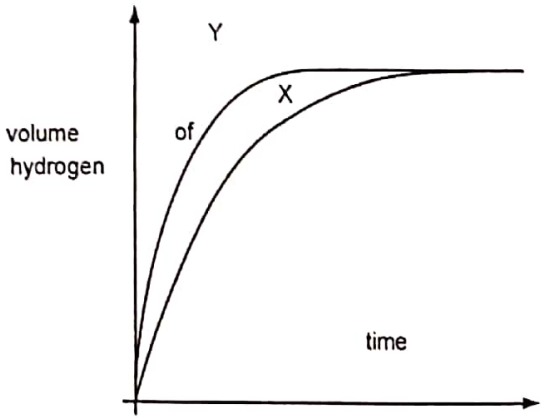
21. The diagram shows an experiment to compare the rate of reaction when a metal is added to hydrochloric acid.

In which test-tube is the reaction fastest? **(2013-J-12)**



Reason: zinc is more reactive than Copper.

23. A student investigates the rate of reaction between zinc and an excess of sulfuric acid. The graph shows the results of two experiments, X and Y. **(2013-N-11)**



Which change explains the difference between X and Y?

A A catalyst is added in Y.

B A lower temperature is used in Y.

C Larger pieces of zinc are used in Y.

D Less concentrated acid is used in Y.

24. The reactions shown may occur in the air during a thunder storm.

$N_2 + O_2 \rightarrow 2NO$

$2NO + O_2 \rightarrow 2NO_2$

$NO + O_3 \rightarrow NO_2 + O_2$

Which row shows what happens to the reactant molecules in each of these reactions? **(2013-N-11)**

	N_2	NO	O_3
A	oxidised	oxidised	oxidised
B	oxidised	oxidised	reduced
C	reduced	reduced	oxidised
D	reduced	reduced	reduced

25. The equation for the effect of heat on hydrated sodium carbonate is as shown.

$Na_2CO_3.10H_2O(s) \rightleftharpoons Na_2CO_3(s) + 10H_2O(g)$

Statements made by four students about the reaction are given.

P) Anhydrous sodium carbonate is formed.

Q) Steam is formed. **(2011-J-11)**

R) There is a colour change from blue to white.

S) The reaction is reversible.

Which students' statements are correct?

A) P, Q and R only

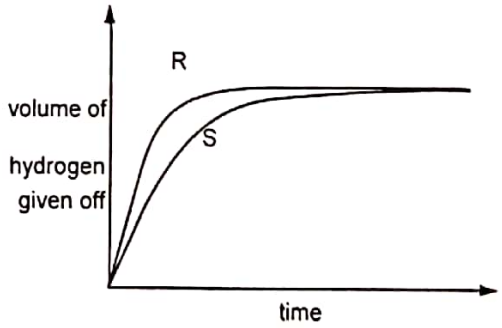
B) P, Q and S only

C) Q, R and S only

D) P, Q, R and S

26. A student investigates the rate of reaction between magnesium and excess sulfuric acid. The volume of hydrogen given off in the reaction is measured over time.

The graph shows the results of two experiments, R and S. **(2011-J-11)**



Which change in conditions would cause the difference between R and S? **(2011-J-11)**

A) catalyst is added in S.

B) The acid is more concentrated in R than in S.

C) The magnesium is less finely powdered in R than in S.

D) The temperature in R is lower than in S.

28. The sign ⇌ is used in some equations to show that a reaction is reversible. Two incomplete equations are given. **(2011-N-11)**

	Reactants	Products
P	$CoCl_2 + 2H_2O$	$CoCl_2.2H_2O$
Q	$C + O_2$	CO_2

For which of these reactions can a ⇌ sign be correctly used to complete the equation?

	P	Q
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

29. Copper(II) carbonate reacts with dilute sulfuric acid.

$CuCO_3(s) + H_2SO_4(aq) \rightarrow CuSO_4(aq) + CO_2(g) + H_2O(l)$

The speed of the reaction can be changed by varying the conditions.

Which conditions would always increase the speed of this chemical reaction?

(1) Increase the concentration of the reactants.

(2) Increase the size of the pieces of copper(II) carbonate.

(3) Increase the temperature.

(4) Increase the volume of sulfuric acid. **(2011-N-11)**

A) 1, 3 and 4 B) 1 and 3 only C) 2 and 3 D) 3 and 4 only

33. The red colour in some pottery glazes may be formed as a result of the reactions shown.

$$CuCO_3 \xrightarrow{\text{heat}} CuO + CO_2$$

$$CuO + SnO \longrightarrow Cu + SnO_2$$

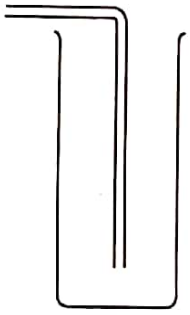
These equations show that .....1..... is oxidised and .....2..... is reduced.

Which substances correctly complete gaps 1 and 2 in the above sentence? **(2010-N-11)**

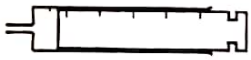
	1	2
A	CO_2	SnO_2
B	$CuCO_3$	CuO
C	CuO	SnO
D ✓	SnO	CuO

34. An experiment is carried out to investigate the rate of reaction when calcium carbonate is reacted with hydrochloric acid. **(2014-J-11)**

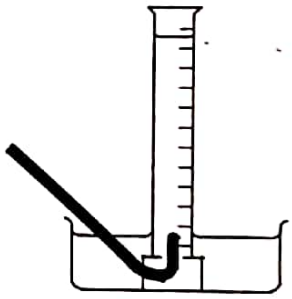
The volume of carbon dioxide gas given off is measured at different intervals of time. The diagram shows pieces of apparatus used to collect gases.



1
downward delivery



2
gas measuring
Syringe



3
over water in
graduated tube

Which apparatus is suitable to collect and measure the volume of the carbon dioxide?

A 1, 2 and 3 B ✓ 2 and 3 only C 1 only D 3 only

35. The effect of temperature on the rate of the reaction between marble chips and hydrochloric acid can be investigated by measuring the production of carbon dioxide. **(2015-N-11)**

Which item of equipment is not required for the investigation?

A. ✓ condenser

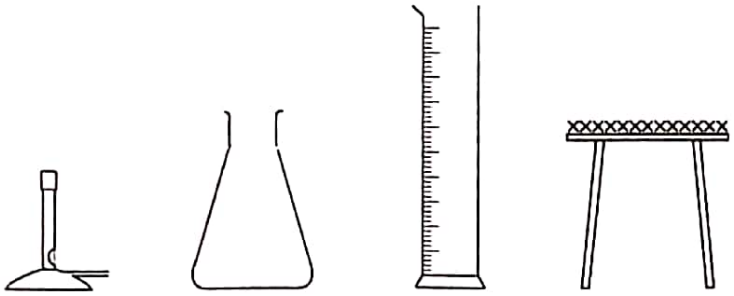
B. gas syringe

C. stopclock

D. thermometer

36. A student was asked to measure the rate of reaction between dilute hydrochloric acid and marble chips at different temperatures. **(2015-N-13)**

Some of the apparatus used is shown.



Which two other pieces of apparatus would be needed?

A. balance and pipette

B. balance and stopclock

C. beaker and stopclock

D. burette and pipette

37. A student measures the rate of two reactions.

In one reaction, there is a change in mass of the reactants during the reaction.

In the second reaction, there is a change in temperature during the reaction.

Which piece of apparatus would be essential in both experiments? **(2013-N-11)**

A. balance

B. clock

C. pipette

D. thermometer

38. A student investigates how the concentration of an acid affects the speed of reaction with a 0.5 g mass of magnesium at 30 °C. **(2012-J-11)**

The student has a beaker, concentrated acid, water and the apparatus below.

P. a balance

Q. a clock

R. a measuring cylinder

S. a thermometer

Which pieces of apparatus does the student use?

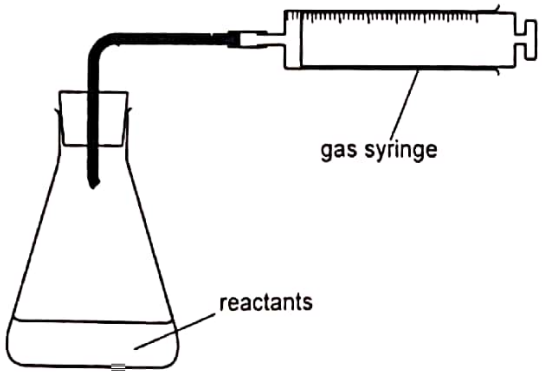
A. P, Q and R only

B. P, Q and S only

C. Q, R and S only

✓ D. P, Q, R and S

39. The apparatus shown is used to measure the speed of a reaction.



Which equation represents a reaction where the speed can be measured using this apparatus?

✓ A. $Mg(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2(g)$

B. $HCl(aq) + NaOH(aq) \rightarrow NaCl(aq) + H_2O(l)$

C. $Fe(s) + CuSO_4(aq) \rightarrow Cu(s) + FeSO_4(aq)$

D. $2Na(s) + Br_2(l) \rightarrow 2NaBr(s)$

Reason: Gas is produced in A.

40. Solutions of a halogen and a sodium halide are mixed. Which mixture darkens in colour because a reaction occurs? **(2010-J-11)**

A. bromine and sodium chloride

B. bromine and sodium fluoride

C. chlorine and sodium fluoride

✓ D. chlorine and sodium iodide