

CHEMISTRY

0620 Paper 3

2017 — 2023

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CHEMISTRY 0620

TOPICAL PAST PAPER WORKSHEETS

2017 - 2023 | Questions + Mark scheme

AVAILABLE PAPERS

P1

1362 Questions

P2

1385 Questions

P3

715 Questions

P4

550 Questions

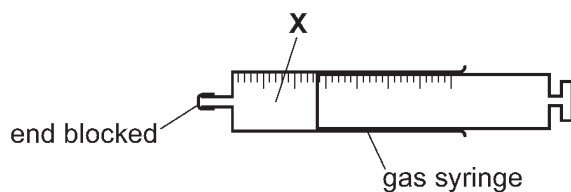
P6

186 Questions

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| TOPICS | P1 | P2 | P3 | P4 | P6 |
|--|-----|-----|----|----|----|
| STATES OF MATTER | 57 | 38 | 31 | 9 | 1 |
| SEPARATING SUBSTANCES | 71 | 66 | 24 | 12 | 33 |
| ATOMS & ELEMENTS | 82 | 67 | 65 | 50 | 1 |
| ATOMS COMBINING | 87 | 99 | 64 | 46 | 0 |
| REACTING MASSES & CHEMICAL EQUATIONS | 39 | 57 | 32 | 38 | 4 |
| USING MOLES | 5 | 13 | 2 | 28 | 3 |
| REDOX REACTIONS | 31 | 44 | 20 | 6 | 0 |
| ELECTRICITY & CHEMICAL CHANGES | 48 | 54 | 37 | 33 | 3 |
| ENERGY CHANGES & REVERSIBLE REACTIONS | 88 | 103 | 26 | 34 | 18 |
| THE SPEED OF A REACTION | 57 | 64 | 38 | 27 | 31 |
| ACIDS & BASES | 108 | 113 | 54 | 47 | 32 |
| THE PERIODIC TABLE | 133 | 114 | 57 | 28 | 0 |
| THE BEHAVIOR OF METALS | 74 | 76 | 44 | 19 | 3 |
| MAKING USE OF METALS | 73 | 71 | 30 | 30 | 1 |
| AIR & WATER | 69 | 67 | 41 | 16 | 2 |
| SOME NON-METALS & THEIR COMPOUNDS | 80 | 97 | 37 | 27 | 2 |
| ORGANIC CHEMISTRY | 172 | 151 | 62 | 50 | 1 |
| POLYMERS | 47 | 71 | 17 | 28 | 1 |
| IN THE LAB (CHEMICAL TEST & SALT ANALYSIS) | 41 | 20 | 34 | 22 | 50 |

(b) A closed gas syringe contains substance X.



Describe what happens to the volume of substance X in the syringe when the pressure is increased. The temperature remains constant. Explain your answer in terms of particles.

.....
..... [2]

(c) Substance Z is diamond. Diamond is used in jewellery.

Give **one** other use of diamond.

..... [1]

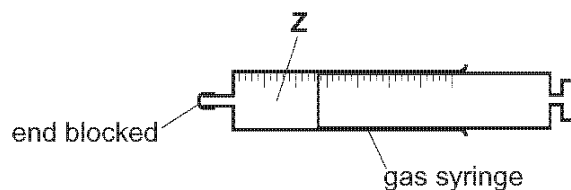
(d) Substance Y undergoes physical and chemical changes.

Which **two** of the following are physical changes? Explain your answer.

- A Substance Y dissolves easily in water.
- B An aqueous solution of substance Y gives a white precipitate with acidified aqueous silver nitrate.
- C Substance Y melts at 801 °C.
- D Substance Y reacts with concentrated sulfuric acid.

.....
.....
..... [3]

(b) A closed gas syringe contains substance Z.



Describe what happens to the volume of substance Z in the syringe when the temperature is increased. The pressure remains constant. Explain your answer in terms of particles.

.....
..... [2]

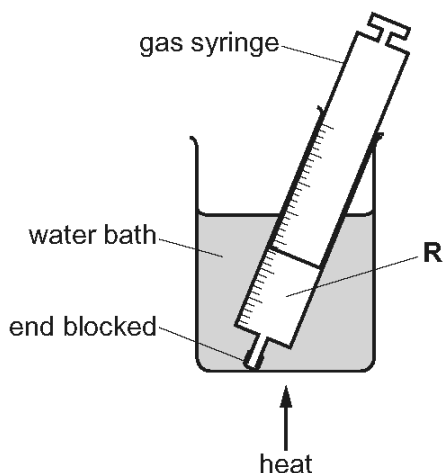
(c) Describe the colour change when substance Y is added to anhydrous copper(II) sulfate.

..... [2]

(d) Give a reason why substance Y is a compound.

..... [1]

(b) A closed gas syringe contains substance R. The syringe is heated in a water bath.



Describe what happens to the volume of substance R in the syringe. The pressure remains constant. Explain your answer in terms of particles.

.....
 [2]

(c) Substance P undergoes physical and chemical changes.

Which two of the following are physical changes? Explain your answer.

- A Substance P reacts with concentrated sulfuric acid.
- B Iodine forms when chlorine is added to an aqueous solution of substance P.
- C Substance P boils at 1330 °C.
- D Substance P dissolves easily in water.

.....

 [3]

(d) Graphite has a giant covalent structure containing layers of carbon atoms. Graphite is used to make inert electrodes for electrolysis.

State one other use of graphite and explain how this use is related to its structure.

.....
 [2]

ANSWERS

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1 - (0620/31_Summer_2017_Q3) - Atoms Combining, States Of Matter

| | | |
|-----|--|---|
| (a) | any 5 of: X has covalent bonding X particles are randomly arranged / irregularly arranged X particles are moving rapidly / freely / randomly / irregularly Y has ionic bonding / ionic Y particles are regularly arranged / lattice / in rows / uniformly arranged Y particles (only) vibrate / do not move from place to place Z has covalent bonding Z particles are regularly arranged / lattice / in a tetrahedral shape Z particles (only) vibrate / do not move from place to place | 5 |
| (b) | volume gets smaller | 1 |
| | particles get closer together | 1 |
| (c) | drill tips / drills / cutting (tools) | 1 |
| (d) | A / substance Y dissolves easily in water | 1 |
| | C / substance Y melts (at 8015 °C) | 1 |
| | the change can be reversed by altering the conditions | 1 |

2 - (0620/32_Summer_2017_Q3) - Atoms Combining, States Of Matter, Energy Changes And Reversible Reactions

| | | |
|-----|--|---|
| (a) | any 5 of: X has ionic bonding / ionic X particles are regularly arranged / lattice / in rows / uniformly arranged X particles (only) vibrate / do not move from place to place Y has covalent bonding Y has irregular arrangement of particles / random arrangement Y particles are sliding over each other / moving slowly Z has covalent bonding Z particles are randomly arranged / irregularly arranged Z particles moving randomly / moving rapidly / moving freely / moving quickly / moving fast | 5 |
| (b) | volume increases / volume gets larger | 1 |
| | particles get further apart | 1 |
| (c) | white | 1 |
| | to blue | 1 |
| (d) | it has (two different types of) <u>atoms bonded / joined</u> | 1 |

3 - (0620/33_Summer_2017_Q3) - Reacting Masses And Chemical Equations, States Of Matter

| | | |
|-----|--|---|
| (a) | any 5 of: P has ionic bonding / ionic P particles are regularly arranged / lattice / in rows / uniformly arranged P particles (only) vibrating / not moving from place to place Q has covalent bonding Q has irregular arrangement of particles / random arrangement Q particles moving slowly / moving randomly / sliding over each other R no bonding (between atoms) / weak bonding between atoms / weak attractive forces between atoms R has irregular arrangement of particles / random arrangement R particles moving randomly / moving rapidly / freely moving / randomly (moving) / irregular (movement) | 5 |
| (b) | volume increases | 1 |
| | particles get further apart | 1 |
| (c) | C / boils (at 1330 °C) | 1 |
| | D / dissolves (readily in water) | 1 |
| | the change can be reversed by altering the conditions | 1 |
| (d) | pencil (leads) / lubricant | 1 |
| | layers move OR slide over each other | 1 |