

STUDENT:	TEACHER:
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CSE TEST – OCTOBER 2010

YEAR 11 – CHEMISTRY

Written test 2

Reading time: 15 minutes
Writing time: 1 hour 30 minutes

QUESTION AND ANSWER BOOK

Structure of book

Section	Number of questions	Number of questions to be answered	Number of marks	Suggested times (minutes)
A	20	20	20	30
B	7	7	55	60
			Total 75	90

- Students are permitted to bring into the test room: pens, pencils, highlighters, erasers, sharpeners, rulers, an approved graphics calculator (memory cleared) and/or one scientific calculator.
- Students are **NOT** permitted to bring into the test room: blank sheets of paper and/or white out liquid/tape.

Materials

- Question and answer book of 18 pages with an accompanying data sheet.
- Detachable answer sheet for multiple choice questions. You may remove this during reading time.

Instructions

- Write your **name** in the space provided above and on the multiple choice answer sheet.
- All written responses must be in English.

At the end of the test

- Place the answer sheet for multiple choice questions inside the front cover of this book.

Students are NOT permitted to bring mobile phones and/or other electronic communication devices into the test room.

SECTION A – Multiple choice questions

Instructions for Section A

Answer **all** questions in pencil on the answer sheet provided for multiple choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1, an incorrect answer scores 0. Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

Question 1

Which one of the following equations most accurately represents the process of photosynthesis?

- A. $C_6H_{12}O_6(aq) + 6O_2(g) \xrightarrow{\text{UV light, Chlorophyll}} 6CO_2(g) + 6H_2O(l)$
- B. $6CO_2(g) + 6H_2O(l) \rightarrow C_6H_{12}O_6(aq) + 6O_2(g)$
- C. $C_6H_{12}O_6(aq) \rightarrow 2C_2H_5OH(aq) + 2CO_2(g)$
- D. $6CO_2(g) + 6H_2O(l) \xrightarrow{\text{UV light, Chlorophyll}} C_6H_{12}O_6(aq) + 6O_2(g)$

Question 2

The same amount of heat energy is supplied to each of 100 g of water and 100 g of copper. The effect on the substances would be that

- A. the temperature of both substances would increase by the same amount as they have absorbed the same amount of heat.
- B. the temperature of the water would increase more than that of the copper as copper is a better conductor of heat than water.
- C. the temperature of the copper would increase more than that of the water as water has a higher specific heat capacity than copper.
- D. the temperature of the water would increase more than that of the copper as water has a higher specific heat capacity than copper.

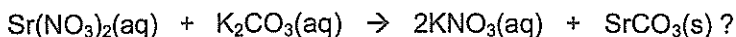
Question 3

Which one of the following processes is most likely to occur when each of the substances hydrogen bromide, HBr, methanol, CH₃OH, sodium nitrate, NaNO₃, zinc carbonate, ZnCO₃ is added to water?

- | | Insoluble | Dissociates | Ionises | Hydrogen bonds to water |
|----|------------------|------------------|------------------|-------------------------|
| A. | sodium nitrate | hydrogen bromide | methanol | zinc carbonate |
| B. | zinc carbonate | sodium nitrate | hydrogen bromide | methanol |
| C. | hydrogen bromide | sodium nitrate | methanol | zinc carbonate |
| D. | zinc carbonate | hydrogen bromide | sodium nitrate | methanol |

Question 4

Which one of the following is the correct ionic equation derived from the balanced equation



- A. $\text{Sr}^{2+}(\text{aq}) + \text{NO}_3^-(\text{aq}) + 2\text{K}^+(\text{aq}) + \text{CO}_3^{2-}(\text{aq}) \rightarrow 2\text{KNO}_3(\text{aq}) + \text{SrCO}_3(\text{s})$
- B. $2\text{K}^+(\text{aq}) + 2\text{NO}_3^-(\text{aq}) \rightarrow 2\text{KNO}_3(\text{aq})$
- C. $\text{K}^+(\text{aq}) + \text{NO}_3^-(\text{aq}) \rightarrow \text{KNO}_3(\text{aq})$
- D. $\text{Sr}^{2+}(\text{aq}) + \text{CO}_3^{2-}(\text{aq}) \rightarrow \text{SrCO}_3(\text{s})$

Question 5

When shaken, then left to stand, a mixture of oil and water separates into two layers with oil as the upper layer. The best explanation of this is that

- A. oil is less dense than water and the intermolecular bonds between oil molecules are weaker than the intermolecular bonds between oil molecules and water molecules.
- B. oil is more dense than water and the intermolecular bonds between oil molecules are stronger than the intermolecular bonds between oil molecules and water molecules.
- C. oil is less dense than water and the intermolecular bonds between oil molecules are stronger than the intermolecular bonds between oil molecules and water molecules.
- D. oil is more dense than water and the intermolecular bonds between oil molecules are weaker than the intermolecular bonds between oil molecules and water molecules.

Question 6

The solubility of barium carbonate is 0.002 g/100 g at 25°C. This concentration expressed as ppb (parts per billion) is

- A. 2×10^4 ppb.
- B. 2×10^6 ppb.
- C. 2×10^7 ppb.
- D. 2×10^9 ppb.

Question 7

- | | |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1. $\text{HF}(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_3\text{O}^+(\text{aq}) + \text{F}^-(\text{aq})$ | 4. $\text{NH}_3(\text{g}) + \text{HCl}(\text{g}) \rightarrow \text{NH}_4\text{Cl}(\text{s})$ |
| 2. $\text{HCO}_3^-(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{CO}_3^{2-}(\text{aq}) + \text{H}_2\text{O}(\text{l})$ | 5. $\text{H}_3\text{O}^+(\text{aq}) + \text{SO}_3^{2-}(\text{aq}) \rightarrow \text{HSO}_3^-(\text{aq}) + \text{H}_2\text{O}(\text{l})$ |
| 3. $\text{O}_2(\text{g}) + 2\text{H}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l})$ | 6. $\text{H}_2\text{O}_2(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g})$ |

Which of the above equations represent Lowry-Brønsted acid-base reactions?

- A. 2. 5.
- B. 3. 4. 6.
- C. 1. 2. 3. 4. 5.
- D. 1. 2. 4. 5.

Question 8

A 0.1 M aqueous solution of hydrochloric acid, HCl, a strong acid, and a 0.2 M aqueous solution of hydrofluoric acid, HF, a weaker acid, are prepared.

- A. The concentration of H_3O^+ ions in HCl is 0.1 M and in HF is 0.2 M.
- B. The concentration of H_3O^+ ions in HCl is 0.1 M and in HF is less than 0.2 M.
- C. The concentration of H_3O^+ ions in HCl is less than 0.1 M and in HF is 0.2 M.
- D. The concentration of H_3O^+ ions in HCl is less than 0.1 M and in HF is less than 0.2 M.

Question 9

An electrochemical cell consists of a Cd^{2+}/Cd half cell and an Ag^+/Ag half cell. When this cell operates which of the following statements is incorrect?

- A. Electrons flow from the silver electrode to the cadmium electrode in the external circuit.
- B. Cadmium metal loses electrons.
- C. Silver ions are the oxidant.
- D. Negative ions flow from the salt bridge into the cadmium half cell and positive ions flow into the silver half cell.

Question 10

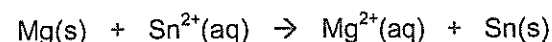
In which of the following equations is a chemical species acting as a diprotic acid?

- A. $\text{H}_3\text{AsO}_4(\text{aq}) + 3\text{NaOH}(\text{aq}) \rightarrow \text{Na}_3\text{AsO}_4(\text{aq}) + 3\text{H}_2\text{O}(\text{l})$
- B. $\text{HPO}_4^{2-}(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{PO}_4^{3-}(\text{aq}) + \text{H}_2\text{O}(\text{l})$
- C. $2\text{HCl}(\text{aq}) + \text{Ca}(\text{OH})_2(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$
- D. $\text{H}_2\text{SO}_4(\text{aq}) + 2\text{KOH}(\text{aq}) \rightarrow \text{K}_2\text{SO}_4(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$

Question 11

The pH of a solution of barium hydroxide, $\text{Ba}(\text{OH})_2$, is 12 at 25°C. What is the concentration of barium hydroxide in the solution?

- A. 5×10^{-3} M.
- B. 1×10^{-2} M.
- C. 2 M.
- D. 12 M.

Question 12

The half equations which have been combined to form the redox equation above are

- | Oxidation half equation | Reduction half equation |
|---------------------------------------------------------|------------------------------------------------------|
| A. $\text{Sn}^{2+} + 2\text{e}^- \rightarrow \text{Sn}$ | $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$ |
| B. $\text{Mg}^{2+} + 2\text{e}^- \rightarrow \text{Mg}$ | $\text{Sn} \rightarrow \text{Sn}^{2+} + 2\text{e}^-$ |
| C. $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$ | $\text{Sn}^{2+} + 2\text{e}^- \rightarrow \text{Sn}$ |
| D. $\text{Sn} \rightarrow \text{Sn}^{2+} + 2\text{e}^-$ | $\text{Mg}^{2+} + 2\text{e}^- \rightarrow \text{Mg}$ |

Question 13

An aqueous solution of 4.81g of hydrated potassium carbonate, $K_2CO_3 \cdot xH_2O$, reacts completely with 24.0 mL of 2.30 M hydrochloric acid. The value of x is closest to

- A. 1.5.
- B. 2.
- C. 3.
- D. 4.

Question 14

Which of the following atmospheric gases is least likely to increase in concentration in an urban or industrially polluted environment?

- A. Argon.
- B. Carbon dioxide.
- C. Methane.
- D. Ozone.

Question 15

The environment in which an iron bar is least likely to corrode is

- A. the sea bed in a very deep part of the ocean.
- B. a rural area with average rainfall.
- C. an industrial area with low rainfall.
- D. the intertidal zone on the sea shore.

Question 16

The following reactions occur in the nitrogen cycle. In which reaction is nitrogen reduced?

- A. $N_2(g) + O_2(g) \rightarrow 2NO(g)$
- B. $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$
- C. $2NO_2(g) + H_2O(l) \rightarrow HNO_2(aq) + HNO_3(aq)$
- D. $2NO_2^-(aq) + O_2(g) \rightarrow 2NO_3^-(aq)$

Question 17

The particles in a sample of gas at a fixed temperature and in a closed container

- A. all have the same velocity.
- B. travel in straight lines until they collide.
- C. all have the same kinetic energy.
- D. have strong interparticle attractive forces.

Question 18

Which one of the following is not equivalent to a gas pressure of 1.27 atm?

- A. 1.29 bar.
- B. 1.29×10^2 kPa.
- C. 1.29×10^5 Pa.
- D. 1.29×10^6 N m⁻².

Question 19

10.9 g of a gas occupies a volume of 7.32 L at SLC. The gas is most likely to be

- A. Carbon dioxide.
- B. Helium.
- C. Hydrogen chloride.
- D. Krypton.

Question 20

Which of the following does not involve the absorption of UV radiation?

- A. The breakdown of CFCs in the stratosphere.
- B. The trapping of atmospheric heat by Greenhouse gases.
- C. The formation of photochemical smog.
- D. Photosynthesis.

END OF SECTION A

SECTION B – Short answer questions

Instructions for Section B

Answer **all** questions in the spaces provided.

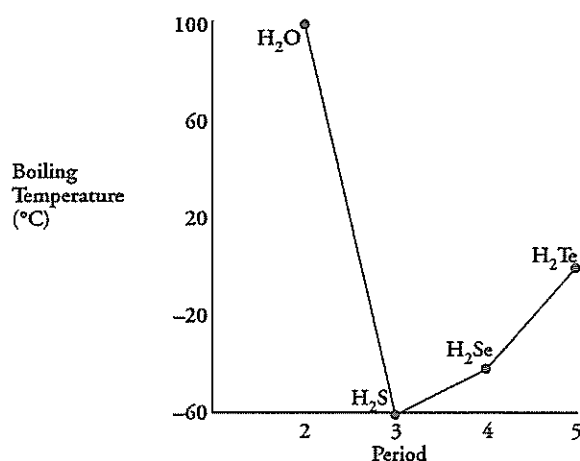
To obtain full marks for your responses you should

- give simplified answers with an appropriate number of significant figures to all numerical questions; unsimplified answers will not be given full marks.
- show all working in your answers to numerical questions. No credit will be given for an incorrect answer unless it is accompanied by details of the working.
- make sure chemical equations are balanced and that the formulas for individual substances include an indication of state; for example $\text{H}_2(\text{g})$; $\text{NaCl}(\text{s})$

Question 1

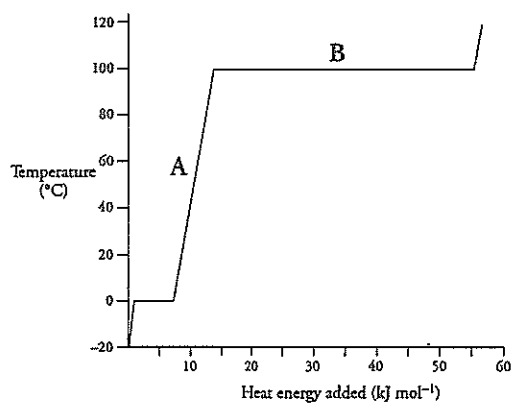
Use the information in the graphs to explain the properties and behaviour of water.

- a. High boiling point of water.



Explain, in terms of chemical bonding, the boiling point of water compared with the other group 16 hydrides.

2 marks

b. Changes of state of water.

The graph on the previous page shows the variation in temperature when heat energy is given to ice initially at -20°C .

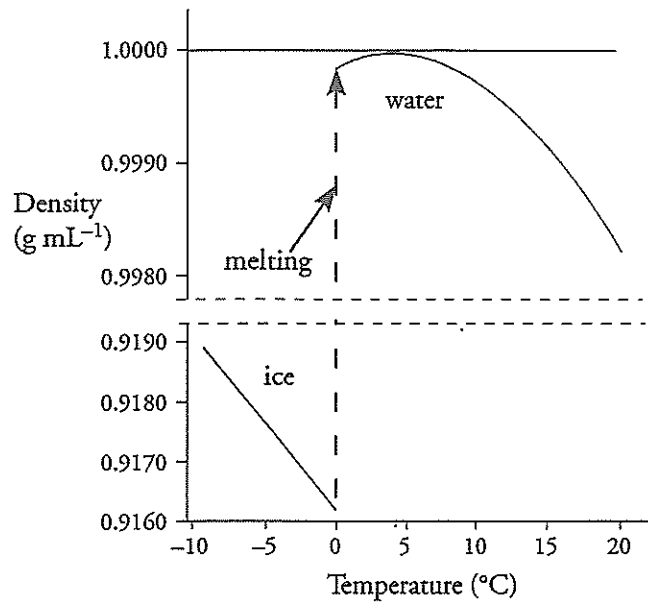
Describe the effect on the water molecules at points A and B of this added heat energy.

A.

B.

2 marks

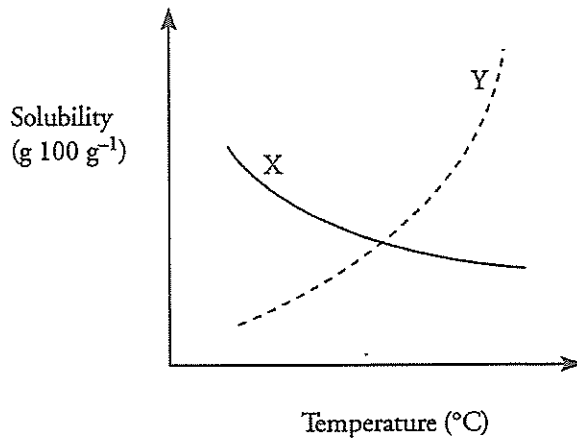
c. Changes of water density as the temperature increases.



Explain in terms of chemical bonding the changes in water density shown on the graph from -5°C to 10°C.

2 marks

d. Solubility of salts and gases



Identify which curve represents the solubility of a typical salt, and which the solubility of a typical gas. For each explain the shape of the curve.

X

Reason

Y

Reason

2 marks

Total 8 marks

Question 2

- a. 100 mL of a 1.5 M solution of aluminium sulfate, $\text{Al}_2(\text{SO}_4)_3$, are mixed with 100 mL of a 2.0 M solution of potassium sulfate, K_2SO_4 . What is the concentration of sulfate ions in the resulting solution?

2 marks

- b. Sulfate ions in the combined solution produced in a. are precipitated as barium sulfate by adding 200 mL 3.0 M barium chloride solution.

- i. Write a balanced ionic equation for this reaction.

1 mark

- ii. Determine whether the sulfate ions or the barium ions are in excess and by what amount.

2 marks

iii. Calculate the mass of the barium sulfate precipitate.

1 mark

c.

i. In a separate experiment, 5.72 g of potassium sulfate is completely dissolved in 100 mL of water. Calculate the molarity of the potassium sulfate solution.

2 marks

ii. 60.0 mL of water are added to the potassium sulfate solution. Calculate the molarity after dilution.

1 mark

iii. Convert the molarity calculated in c. ii. above to a concentration in % m/v.

2 marks

Total 11 marks

Question 3

- a. Name one naturally occurring type of acid rain and one type of acid rain formed by an industrial pollutant. Describe one possible effect of each on the environment.

1. Natural acid rain

Effect

2. Industrial acid rain

Effect

2 marks

- b. The process of purifying water may involve the addition of calcium hydroxide, $\text{Ca}(\text{OH})_2$, to the water to neutralise acidity. 3.0×10^4 L of water with a pH of 4.0 is to be neutralised using calcium hydroxide.

- i. Write an ionic equation for the neutralisation reaction.

1 mark

- ii. Calculate the number of moles of H_3O^+ ions in the water and hence the number of moles of OH^- ions required for complete neutralisation.

2 marks

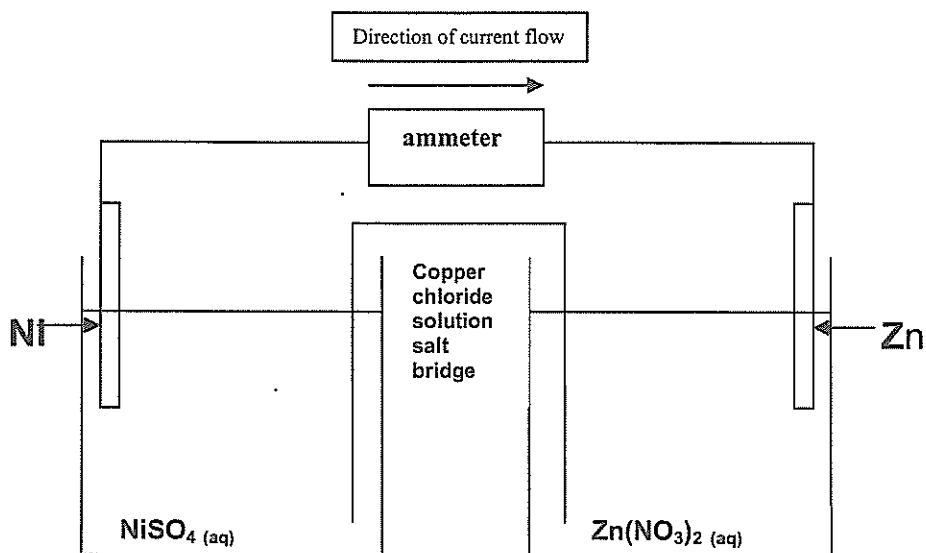
iii. Calculate the required mass of calcium hydroxide.

2 marks

Total 7 marks

Question 4

- a. The galvanic cell below contains three errors. State and explain these in the space provided below the diagram.



Half Equations $\text{Ni}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Ni}(\text{s})$ $\text{Zn}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Zn}(\text{s})$

	Error	Explanation
1.		
2.		
3.		

6 marks

- b. State which of the reactions in the table below are redox reactions, and for each redox equation, identify the oxidant.

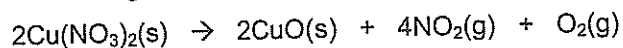
Reaction	Redox Yes/No	Oxidant
$\text{Ba}(\text{NO}_3)_2(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow 2\text{HNO}_3(\text{aq}) + \text{BaSO}_4(\text{s})$		
$2\text{Mg}(\text{s}) + \text{Cl}_2(\text{g}) \rightarrow \text{MgCl}_2(\text{s})$		
$2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l})$		
$\text{NaCl}(\text{s}) \rightarrow \text{Na}^+(\text{aq}) + \text{Cl}^-(\text{aq})$		

3 marks

Total 9 marks

Question 5

20.0 g of solid copper nitrate decomposes completely on heating producing solid copper oxide, nitrogen dioxide gas and oxygen gas according to the following equation



- a. Calculate the mass of copper oxide formed.

2 marks

- b. Calculate the total volume of gas formed at a temperature of 60.0°C and 1.10 atm pressure.

4 marks

Total 6 marks

Question 6

- a. **Either** Write a balanced equation for the laboratory preparation of oxygen **or** carbon dioxide gas. Include any catalysts used.
- or** Briefly describe the industrial preparation of a sample of nitrogen from air.

2 marks

b.

- i. Describe an appropriate method for collection of the gas chosen in a.

2 marks

- ii. Explain why you have chosen this method.

2 marks

- c. Write a balanced equation for each of the following gas preparations.

- i. Nitrogen(IV)oxide by the reaction of copper metal with concentrated nitric acid. The products are copper(II) nitrate solution, nitrogen(IV) oxide gas and water.

2 marks

- ii. Sulfur dioxide by the reaction of zinc metal and concentrated sulfuric acid. The products are zinc sulfate solution, sulphur dioxide gas and water.

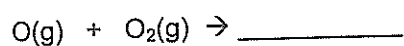
2 marks

Total 10 marks

Question 7

Ozone in the earth's atmosphere has both beneficial and harmful effects.

- a. Complete the following equations for the reactions by which ozone is formed by filling in the underlined spaces.



2 marks

- b. Describe one harmful effect on living things of ozone in the atmosphere.

1 mark

- c. Describe one way in which ozone is beneficial to living things.

1 mark

Total 4 marks**END OF SECTION B****END OF QUESTION AND ANSWER BOOK**

CSE TEST – OCTOBER 2010

YEAR 11 – CHEMISTRY

Written test 1

Data Sheet

Directions to students

This data sheet is for your reference.

Any writing, notes, drawings or jottings you make on this data sheet will **not** be considered in the marking.

You may keep this data sheet.

Physical Constants

Gas constant (R) = $8.31 \text{ J K}^{-1} \text{ mol}^{-1}$

Ionic Product for Water (K_w) = $1.00 \times 10^{-14} \text{ mol}^2 \text{ L}^{-2}$ at 298°K

Molar Volume (V_m) of an ideal gas at 25°C and 101.3 kPa (SLC) = 24.5 L mol^{-1}

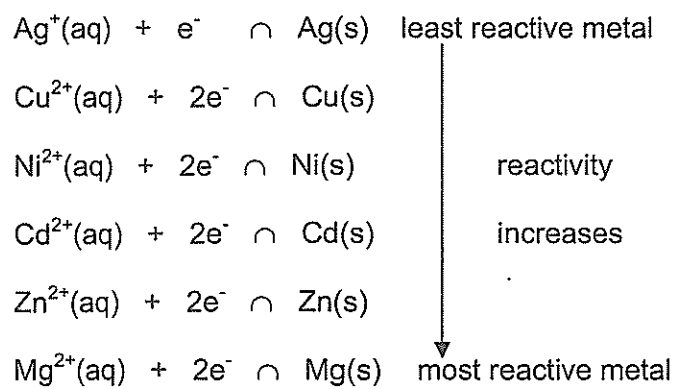
Specific Heat Capacity of water = $4.18 \text{ J g}^{-1} \text{ C}^{-1}$

Specific Heat Capacity of copper = $0.38 \text{ J g}^{-1} \text{ C}^{-1}$

1 atm = 101.3 kPa = 1.013 bar

1 N m⁻² = 1Pa

Activity Series (Electrochemical Series) of Metals



1. Periodic table of the elements

1		4		79		atomic number		symbol of element		name of element		2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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3	Li 6.9	4	Be 9.0	79	Au 197.0	26	Fe 55.9	78	Pt 195.1	76	Os 190.2	75	Re 186.2	80	Hg 200.6	81	Tl 204.4	82	Pb 207.2	83	Bi 209.0	84	Po (209)	85	At (210)	86	Rn (222)	87	Fr (223)	88	Ra (226)	89	Ac (227)	90	Th 232.0	91	Pa 231.0	92	U 238.0	93	Np (237.1)	94	Pu (244)	95	Am (243)	96	Cm (247)	97	Bk (247)	98	Cf (251)	99	Es (252)	100	Fm (257)	101	Md (258)	102	No (259)	103	Lr (262)	104	Rf (261)	105	Db (262)	106	Sg (266)	107	Bh (264)	108	Hs (277)	109	Mt (268)	110	Ds (271)	111	Rg (272)	112	Cn (285)	113	Nh (284)	114	Fl (289)	115	Mc (288)	116	Lv (293)	117	Ts (294)	118	Og (294)	119	Uue (295)	120	Uub (293)	121	Uut (294)	122	Uuq (294)	123	Uuq (294)	124	Uuq (294)	125	Uuq (294)	126	Uuq (294)	127	Uuq (294)	128	Uuq (294)	129	Uuq (294)	130	Uuq (294)	131	Uuq (294)	132	Uuq (294)	133	Uuq (294)	134	Uuq (294)	135	Uuq (294)	136	Uuq (294)	137	Uuq (294)	138	Uuq (294)	139	Uuq (294)	140	Uuq (294)	141	Uuq (294)	142	Uuq (294)	143	Uuq (294)	144	Uuq (294)	145	Uuq (294)	146	Uuq (294)	147	Uuq (294)	148	Uuq (294)	149	Uuq (294)	150	Uuq (294)	151	Uuq (294)	152	Uuq (294)	153	Uuq (294)	154	Uuq (294)	155	Uuq (294)	156	Uuq (294)	157	Uuq (294)	158	Uuq (294)	159	Uuq (294)	160	Uuq (294)	161	Uuq (294)	162	Uuq (294)	163	Uuq (294)	164	Uuq (294)	165	Uuq (294)	166	Uuq (294)	167	Uuq (294)	168	Uuq (294)	169	Uuq (294)	170	Uuq (294)	171	Uuq (294)	172	Uuq (294)	173	Uuq (294)	174	Uuq (294)	175	Uuq (294)	176	Uuq (294)	177	Uuq (294)	178	Uuq (294)	179	Uuq (294)	180	Uuq (294)	181	Uuq (294)	182	Uuq (294)	183	Uuq (294)	184	Uuq (294)	185	Uuq (294)	186	Uuq (294)	187	Uuq (294)	188	Uuq (294)	189	Uuq (294)	190	Uuq (294)	191	Uuq (294)	192	Uuq (294)	193	Uuq (294)	194	Uuq (294)	195	Uuq (294)	196	Uuq (294)	197	Uuq (294)	198	Uuq (294)	199	Uuq (294)	200	Uuq (294)	201	Uuq (294)	202	Uuq (294)	203	Uuq (294)	204	Uuq (294)	205	Uuq (294)	206	Uuq (294)	207	Uuq (294)	208	Uuq (294)	209	Uuq (294)	210	Uuq (294)	211	Uuq (294)	212	Uuq (294)	213	Uuq (294)	214	Uuq (294)	215	Uuq (294)	216	Uuq (294)	217	Uuq (294)	218	Uuq (294)	219	Uuq (294)	220	Uuq (294)	221	Uuq (294)	222	Uuq (294)	223	Uuq (294)	224	Uuq (294)	225	Uuq (294)	226	Uuq (294)	227	Uuq (294)	228	Uuq (294)	229	Uuq (294)	230	Uuq (294)	231	Uuq (294)	232	Uuq (294)	233	Uuq (294)	234	Uuq (294)	235	Uuq (294)	236	Uuq (294)	237	Uuq (294)	238	Uuq (294)	239	Uuq (294)	240	Uuq (294)	241	Uuq (294)	242	Uuq (294)	243	Uuq (294)	244	Uuq (294)	245	Uuq (294)	246	Uuq (294)	247	Uuq (294)	248	Uuq (294)	249	Uuq (294)	250	Uuq (294)	251	Uuq (294)	252	Uuq (294)	253	Uuq (294)	254	Uuq (294)	255	Uuq (294)	256	Uuq (294)	257	Uuq (294)	258	Uuq (294)	259	Uuq (294)	260	Uuq (294)	261	Uuq (294)	262	Uuq (294)	263	Uuq (294)	264	Uuq (294)	265	Uuq (294)	266	Uuq (294)	267	Uuq (294)	268	Uuq (294)	269	Uuq (294)	270	Uuq (294)	271	Uuq (294)	272	Uuq (294)	273	Uuq (294)	274	Uuq (294)	275	Uuq (294)	276	Uuq (294)	277	Uuq (294)	278	Uuq (294)	279	Uuq (294)	280	Uuq (294)	281	Uuq (294)	282	Uuq (294)	283	Uuq (294)	284	Uuq (294)	285	Uuq (294)	286	Uuq (294)	287	Uuq (294)	288	Uuq (294)	289	Uuq (294)	290	Uuq (294)	291	Uuq (294)	292	Uuq (294)	293	Uuq (294)	294	Uuq (294)	295	Uuq (294)	296	Uuq (294)	297	Uuq (294)	298	Uuq (294)	299	Uuq (294)	300	Uuq (294)	301	Uuq (294)	302	Uuq (294)	303	Uuq (294)	304	Uuq (294)	305	Uuq (294)	306	Uuq (294)	307	Uuq (294)	308	Uuq (294)	309	Uuq (294)	310	Uuq (294)	311	Uuq (294)	312	Uuq (294)	313	Uuq (294)	314	Uuq (294)	315	Uuq (294)	316	Uuq (294)	317	Uuq (294)	318	Uuq (294)	319	Uuq (294)	320	Uuq (294)	321	Uuq (294)	322	Uuq (294)	323	Uuq (294)	324	Uuq (294)	325	Uuq (294)	326	Uuq (294)	327	Uuq (294)	328	Uuq (294)	329	Uuq (294)	330	Uuq (294)	331	Uuq (294)	332	Uuq (294)	333	Uuq (294)	334	Uuq (294)	335	Uuq (294)	336	Uuq (294)	337	Uuq (294)	338	Uuq (294)	339	Uuq (294)	340	Uuq (294)	341	Uuq (294)	342	Uuq (294)	343	Uuq (294)	344	Uuq (294)	345	Uuq (294)	346	Uuq (294)	347	Uuq (294)	348	Uuq (294)	349	Uuq (294)	350	Uuq (294)	351	Uuq (294)	352	Uuq (294)	353	Uuq (294)	354	Uuq (294)	355	Uuq (294)	356	Uuq (294)	357	Uuq (294)	358	Uuq (294)	359	Uuq (294)	360	Uuq (294)	361	Uuq (294)	362	Uuq (294)	363	Uuq (294)	364	Uuq (294)	365	Uuq (294)	366	Uuq (294)	367	Uuq (294)	368	Uuq (294)	369	Uuq (294)	370	Uuq (294)	371	Uuq (294)	372	Uuq (294)	373	Uuq (294)	374	Uuq (294)	375	Uuq (294)	376	Uuq (294)	377	Uuq (294)	378	Uuq (294)	379	Uuq (294)	380	Uuq (294)	381	Uuq (294)	382	Uuq (294)	383	Uuq (294)	384	Uuq (294)	385	Uuq (294)	386	Uuq (294)	387	Uuq (294)	388	Uuq (294)	389	Uuq (294)	390	Uuq (294)	391	Uuq (294)	392	Uuq (294)	393	Uuq (294)	394	Uuq (294)	395	Uuq (294)	396	Uuq (294)	397	Uuq (294)	398	Uuq (294)	399	Uuq (294)	400	Uuq (294)	401	Uuq (294)	402	Uuq (294)	403	Uuq (294)	404	Uuq (294)	405	Uuq (294)	406	Uuq (294)	407	Uuq (294)	408	Uuq (294)	409	Uuq (294)	410	Uuq (294)	411	Uuq (294)	412	Uuq (294)	413	Uuq (294)	414	Uuq (294)	415	Uuq (294)	416	Uuq (294)	417	Uuq (294)	418	Uuq (294)	419	Uuq (294)	420	Uuq (294)	421	Uuq (294)	422	Uuq (294)	423	Uuq (294)	424	Uuq (294)	425	Uuq (294)	426	Uuq (294)	427	Uuq (294)	428	Uuq (294)	429	Uuq (294)	430	Uuq (294)	431	Uuq (294)	432	Uuq (294)	433	Uuq (294)	434	Uuq (294)	435	Uuq (294)	436	Uuq (294)	437	Uuq (294)	438	Uuq (294)	439	Uuq (294)	440	Uuq (294)	441	Uuq (294)	442	Uuq (294)	443	Uuq (294)	444	Uuq (294)	445	Uuq (294)	446	Uuq (294)	447	Uuq (294)	448	Uuq (294)	449	Uuq (294)	450	Uuq (294)	451	Uuq (294)	452	Uuq (294)	453	Uuq (294)	454	Uuq (294)	455	Uuq (294)	456	Uuq (294)	457	Uuq (294)	458	Uuq (294)	459	Uuq (294)	460	Uuq (294)	461	Uuq (294)	462	Uuq (294)	463	Uuq (294)	464	Uuq (294)	465	Uuq (294)	466	Uuq (294)	467	Uuq (294)	468	Uuq (294)	469	Uuq (294)	470	Uuq (294)	471	Uuq (294)	472	Uuq (294)	473	Uuq (294)	474	Uuq (294)	475	Uuq (294)	476	Uuq (294)	477	Uuq (294)	478	Uuq (294)	479	Uuq (294)	480	Uuq (294)	481	Uuq (294)	482	Uuq (294)	483	Uuq (294)	484	Uuq (294)	485	Uuq (294)	486	Uuq (294)	487	Uuq (294)	488	Uuq (294)	489	Uuq (294)	490	Uuq (294)	491	Uuq (294)	492	Uuq (294)	493	Uuq (294)	494	Uuq (294)	495	Uuq (294)	496	Uuq (294)	497	Uuq (294)	498	Uuq (294)	499	Uuq (294)	500	Uuq (294)

58	Ce 140.1	59	Pr 140.9	60	Nd 144.2	61	Pm (145)	62	Sm 150.3	63	Eu 152.0	64	Gd 157.2	65	Tb 158.9	66	Dy 162.5	67	Ho 164.9	68	Er 167.3	69	Tm 168.9	70	Yb 173.0	71	Lu 175.0
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90	Th 232.0	91	Pa 231.0	92	U 238.0	93	Np (237.1)	94	Pu (244)	95	Am (243)	96	Cm (247)	97	Bk (247)	98	Cf (251)	99	Es (252)	100	Fm (257)	101	Md (258)	102	No (259)	103	Lr (262)
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TURN OVER

CENTRE FOR STRATEGIC EDUCATION – YEAR 11 CHEMISTRY
Written Test – October 2010

ANSWER SHEET

STUDENT NAME:

INSTRUCTIONS:

Use a **PENCIL** for **ALL** entries. For each question, shade the box which indicates your answer.

All answers must be completed like **THIS** example:

Marks will not be deducted for incorrect answers.

NO MARK will be given if more than **ONE** answer is completed for any question.

If you make a mistake, **ERASE** the incorrect answer – **DO NOT** cross it out.

A	<input checked="" type="checkbox"/>	C	D
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ONE ANSWER PER LINE				ONE ANSWER PER LINE				ONE ANSWER PER LINE						
1	A	B	C	D	10	A	B	C	D	19	A	B	C	D
2	A	B	C	D	11	A	B	C	D	20	A	B	C	D
3	A	B	C	D	12	A	B	C	D					
4	A	B	C	D	13	A	B	C	D					
5	A	B	C	D	14	A	B	C	D					
6	A	B	C	D	15	A	B	C	D					
7	A	B	C	D	16	A	B	C	D					
8	A	B	C	D	17	A	B	C	D					
9	A	B	C	D	18	A	B	C	D					