

Name : _____ ()

Class : 4E1



Greenridge Secondary School

Preliminary Examination 2007

Subject : Chemistry (5068)
Secondary Four Express
Paper 1

Date : 7Sep 2007

Duration : 1 h 30 min

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INSTRUCTIONS TO CANDIDATES

Write your name, index number and class on the answer sheet (OTAS) in the spaces provided.

There are forty questions in this paper. Attempt all questions. For each question, there are four possible answers labelled **A**, **B**, **C** and **D**. Choose the one you consider correct and record your choice in 2B pencil on the separate answer sheet (OTAS).

INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer. A copy of the Periodic Table is printed on page 11.

You are allowed to use the Calculator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO

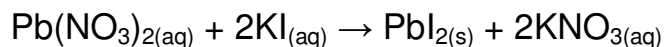
Name of Setter: Mr Victor Lee

This question paper consists of **11** printed pages including this cover page

Answer all questions on the OTAS provided using only soft 2B pencil.

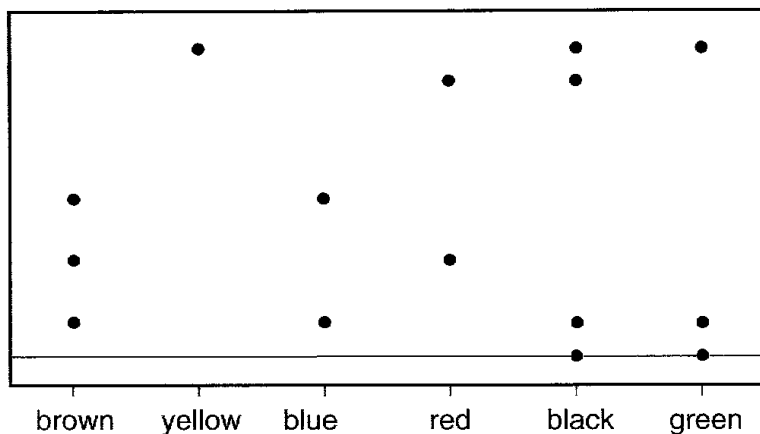
1. The following statements are about the behaviour of the particles in a gas. Which of the following statements is **not** correct?
- A The particles spread throughout the container in which they are placed.
 - B The collisions of the gas particles on the walls of the container cause pressure.
 - C The particles are arranged in a regular pattern.
 - D When a gas is cooled, the spaces between the particles become smaller.

2. Lead(II) iodide can be prepared by the reaction below lead(II) nitrate and potassium iodide.



Which of the following methods could be used to obtain the lead (II) iodide from the mixture of products?

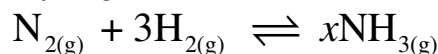
- A crystallisation
 - B evaporation
 - C distillation
 - D filtration
3. A chromatogram of six dyes is shown below.



Which of the following statements is correct?

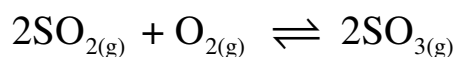
- A The black dye may be used to make the green dye.
 - B The brown dye may be used to make the blue dye.
 - C The yellow dye may be present in the red dye.
 - D The blue dye may be present in the brown dye.
4. Which one of the following compounds contains three elements?
- A sodium sulphate
 - B sodium peroxide
 - C sodium nitride
 - D sodium ethanoate

15. Which of the following produces hydrogen ions when dissolved in water?
- A sulphur dioxide
 - B carbon monoxide
 - C hydrogen
 - D nitrogen monoxide
16. Which of the following reactions does **not** represent a neutralisation reaction?
- A $\text{ZnO}_{(s)} + \text{H}_2\text{SO}_{4(aq)} \rightarrow \text{ZnSO}_{4(aq)} + \text{H}_2\text{O}_{(l)}$
 - B $\text{CuO}_{(s)} + 2\text{HNO}_{3(aq)} \rightarrow \text{Cu}(\text{NO}_3)_2(aq) + \text{H}_2\text{O}_{(l)}$
 - C $\text{CH}_3\text{COOH}_{(aq)} + \text{NaOH}_{(aq)} \rightarrow \text{CH}_3\text{COONa}_{(aq)} + \text{H}_2\text{O}_{(l)}$
 - D $\text{H}_2\text{SO}_{4(aq)} + \text{Na}_2\text{CO}_{3(aq)} \rightarrow \text{Na}_2\text{SO}_{4(aq)} + \text{H}_2\text{O}_{(l)} + \text{CO}_{2(g)}$
17. Which of the following pair of reactants, when mixed together, will produce a salt that can be obtained by filtration?
- A barium chloride and lead (II) nitrate
 - B copper (II) sulphate and zinc chloride
 - C magnesium carbonate and dilute sulphuric acid
 - D sodium carbonate and potassium nitrate
18. Nitrogen and hydrogen reacts to form ammonia gas according to the equation below.



When 1 mole of nitrogen reacts with 3 moles of hydrogen, x moles of ammonia are produced. What is the value of x ?

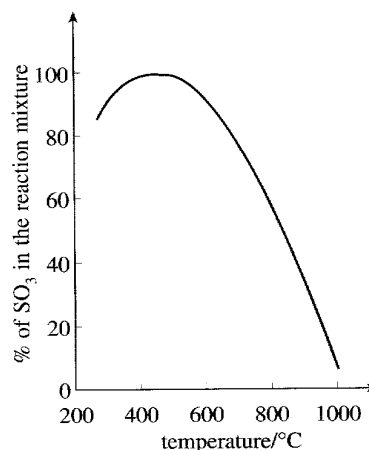
- A exactly 2 mol
 - B exactly 3 mol
 - C less than 2 mol
 - D more than 3 mol
19. Sulphur dioxide reacts with oxygen under suitable conditions to produce sulphur trioxide.



The percentage of sulphur trioxide in the reaction mixture against temperature of reaction mixture is shown.

Which of the following conditions will ensure a high yield of sulphur trioxide?

- A the presence of vanadium (V) oxide
- B a low temperature and high pressure
- C a high temperature and low pressure
- D a high temperature and high pressure



26. Excess amounts of each of the three metals, zinc, nickel and copper are added to aqueous solutions of the three metal sulphate. After 15 minutes, the observations are recorded in the table below.

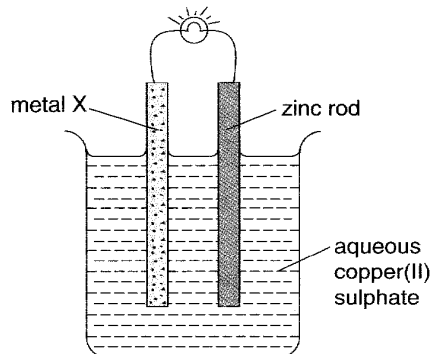
<i>metal solution</i>	<i>Zinc metal</i>	<i>Nickel metal</i>	<i>Copper metal</i>
ZnSO ₄	Solution remains colourless	Solution remains colourless	Solution remains colourless
NiSO ₄	Green solution turns colourless, nickel displaced	Solution remains green	Solution remains green
CuSO ₄	Blue solution turns colourless, brownish pink copper displaced	Blue solution turns green, brownish pink copper displaced	Solution remains blue

What is the order of decreasing reactivity of the three metals?

Most reactive → **Least reactive**

- A** Zinc nickel copper
B Zinc copper nickel
C Copper zinc nickel
D Nickel zinc copper

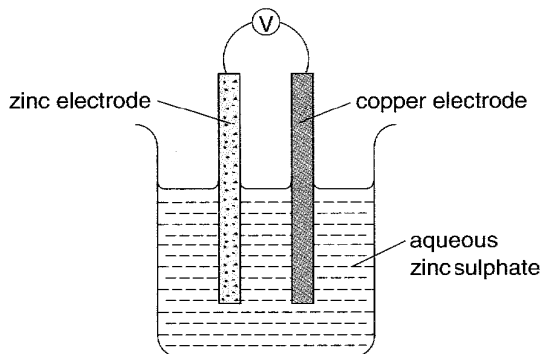
27. A chemical cell is set up as shown below.



The highest voltage would be obtained if metal **X** was

- A** silver.
B magnesium.
C sodium.
D zinc.

28. What happens when a current is drawn from the simple cell shown below?



- A Zinc dissolves to form zinc ions.
- B Copper dissolves to form copper ions.
- C Hydrogen gas is liberated at the zinc electrode.
- D Electrons flow from the copper electrode to the zinc electrode.

29. When concentrated aqueous zinc bromide is electrolysed, which ions will move towards the anode and which towards the cathode?

	<u>Ions moving towards anode</u>	<u>Ions moving towards cathode</u>
A	Br^- only	Zn^{2+} only
B	Br^- only	Zn^{2+} and H^+
C	Br^- and OH^-	Zn^{2+} only
D	Br^- and OH^-	Zn^{2+} and H^+

30. The formation of ammonia from nitrogen and hydrogen is an exothermic reaction. This implies that

- A the products possess more energy than the reactants.
- B the breaking of the $\text{N}\equiv\text{N}$ bond is an exothermic process.
- C the number of bonds broken is less than the number of bonds formed.
- D the total energy change for bond formation is greater than that for bond breaking.

31. Which of the following substances is **not** a fuel?

- A hydrogen
- B oxygen
- C methane
- D alcohol

32. Which set of conditions will give the highest initial rate of formation of hydrogen when a fixed mass of zinc is reacted with 100 cm^3 of hydrochloric acid?

	<u>Temperature</u>	<u>Concentration of HCl</u>	<u>Form of zinc</u>
A	35°C	1.0 mol/dm^3	granules
B	25°C	2.0 mol/dm^3	powdered
C	35°C	3.0 mol/dm^3	powdered
D	25°C	2.0 mol/dm^3	granules

33. Copper (II) oxide is a black solid. It catalyses the decomposition of hydrogen peroxide. Some hydrogen peroxide was shaken with copper (II) oxide in a test-tube. When the reaction had stopped, the test-tube contained

- A a blue solution only.
- B a black solid and a blue solution.
- C a black solid and a colourless solution.
- D a pink solid and a colourless solution.

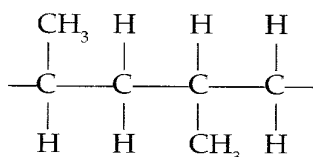
34. What is the main constituent of natural gas?

- A ethene
- B hydrogen
- C methane
- D carbon

35. Propanenitrile has the formula $\text{CH}_3\text{CH}_2\text{CN}$. What is the formula of butanenitrile?

- A CH_3CN
- B $\text{CH}_3(\text{CH}_2)_2\text{CN}$
- C $\text{CH}_3(\text{CH}_2)_3\text{CN}$
- D $\text{CH}_3(\text{CH}_2)_4\text{CN}$

36. The structural formula of a polymer is shown below.



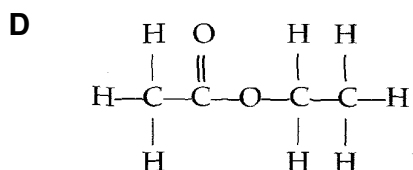
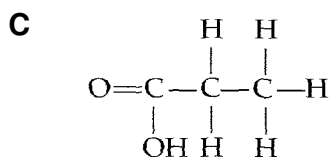
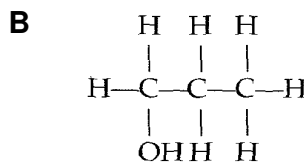
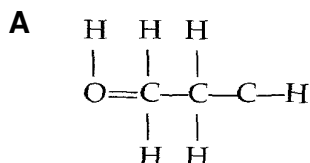
From which of the following hydrocarbons can this polymer be made?

- A butene
- B ethene
- C propane
- D propene

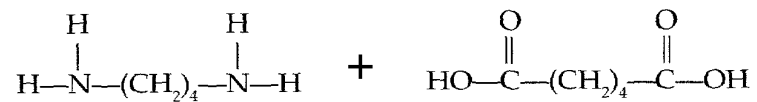
37. Which one of the following reactions does **not** produce carbon dioxide?

- A the combustion of ethanol
- B the oxidation of ethanol
- C the fermentation of sucrose
- D the reaction between propanoic acid and aqueous sodium carbonate

38. Which of the following structures represents a compound which reacts with ethanol to give a sweet-smelling liquid?



39. When the following monomers react,



- A** hydrogen chloride gas is produced.
 - B** ammonia gas is produced.
 - C** hydrogen gas is produced.
 - D** water molecules are produced.
40. Which of the following materials is non-biodegradable?
- A** cotton wool
 - B** paper
 - C** polyester
 - D** wood

~ *The End* ~

