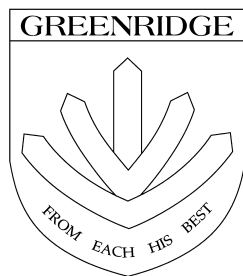


Name : \_\_\_\_\_ (     )                      Class : \_\_\_\_\_



# GreenRidge Secondary School

## PRELIMINARY EXAMINATION 2001

**Subject : Science(Chemistry) (5133)**  
**Secondary Four Normal (Academic)**  
**Paper 3**

**Date : 11 Sep 2001**

**Duration : 1 h 15 min for**  
**Paper 3 and 4 together**

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### **INSTRUCTIONS TO CANDIDATES**

Write your name, index number and class in the spaces at the top of this page and the OMR sheet.

**HAND UP OMR SHEET and QUESTION PAPER SEPARATELY.**  
**DO NOT STAPLE THEM TOGETHER.**

There are **20** questions in this paper. Answer **all** questions.  
Choose the one you consider correct and record your choice in soft 2B pencil on the OMR sheet.

### **INFORMATION FOR CANDIDATES**

Each correct answer is awarded 1 mark.  
A copy of the Periodic Table is printed on page 8.

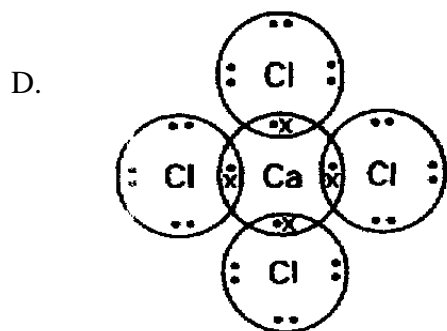
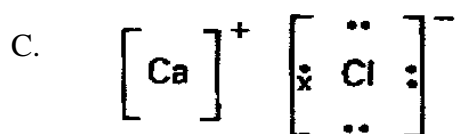
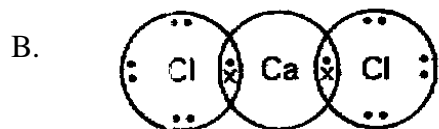
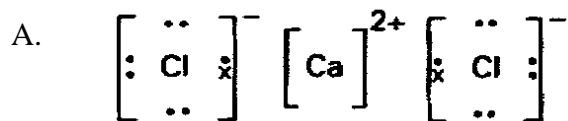
*This paper consists of 8 printed pages, including this page.*

- When water boils, the particles
  - gain energy from the surroundings
  - move closer to each other
  - lose energy to the surroundings
  - remain unchanged
- Magnesium chloride dissolves in water. What is the best method for recovering the magnesium chloride from the solution?
  - crystallisation
  - distillation
  - filtration
  - precipitation
- To separate a mixture of two solids X and Y by filtration, which one of the following solvents should we use?

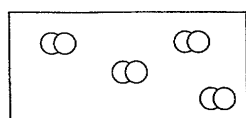
<u>Solvent</u>	<u>Solubility of X in solvent</u>	<u>Solubility of Y in solvent</u>
A.	soluble	soluble
B.	insoluble	insoluble
C.	soluble	insoluble
D.	soluble	more soluble

- Why are calcium ions ( $\text{Ca}^{2+}$ ) positively charged?
  - They have more neutrons than electrons.
  - They have more protons than electrons.
  - They have more electrons than protons.
  - They have more neutrons than protons.

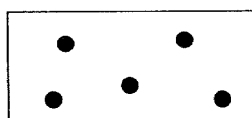
5. Which diagram shows the electronic structure of calcium chloride?  
 (• = chlorine electron, x = calcium electron. Only electrons in the outermost shells are shown.)



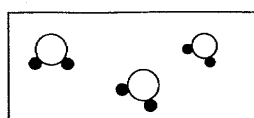
6. Which statement explains why sodium, potassium and rubidium are placed in Group I of the Periodic Table?
- A. They are all pure metals.
  - B. They all form basic oxides.
  - C. They all react with water to give hydrogen.
  - D. They have the same number of valence electrons.
7. Which of the diagrams below represents chlorine gas?



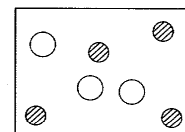
A



B



C



D

8. Element X of proton number 20 combines with element Y of proton number 17 to form a new compound Z. Which of the following gives the correct formula and bonding of Z?

	<u>Formula of Z</u>	<u>Type of bonding</u>
A.	XY <sub>2</sub>	ionic
B.	XY <sub>2</sub>	covalent
C.	XY	ionic
D.	X <sub>2</sub> Y	covalent

9. Which of the following is a base?

- A. carbon dioxide
- B. nitrogen oxide
- C. sodium hydroxide
- D. sulphur dioxide

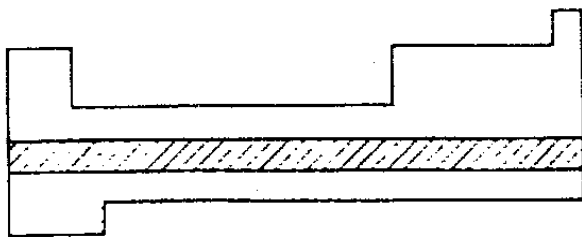
10. The properties of acids and alkalis are respectively due to

	<u>Acids</u>	<u>Alkalis</u>
A.	Hydrogen ion	Hydroxide atom
B.	Hydrogen atom	Hydrogen ion
C.	Hydrogen ion	Hydroxide ion
D.	Hydroxide ion	Hydrogen ion

11. Which metal **does not** react with hydrochloric acid?

- A. iron
- B. magnesium
- C. potassium
- D. silver

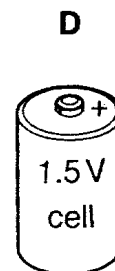
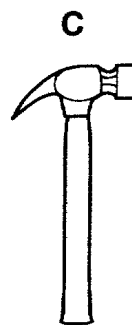
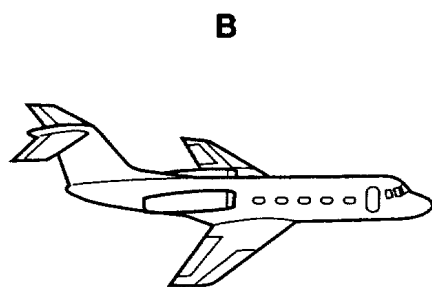
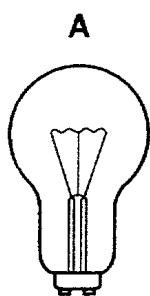
12. The diagram shows the position of a Period in the Periodic Table.



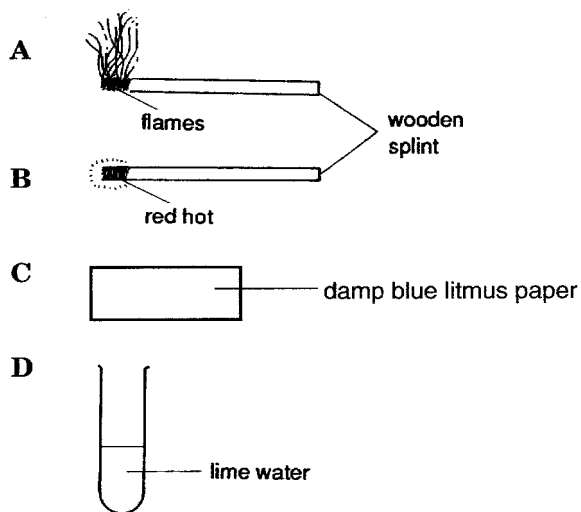
How does the type of element change from left to right across this Period?

- A. Metals → non-metals
- B. Non-metals → metals
- C. Metals → non-metals → metals
- D. Non-metals → metals → non-metals

13. Which of the following is likely to be made mainly from aluminium?

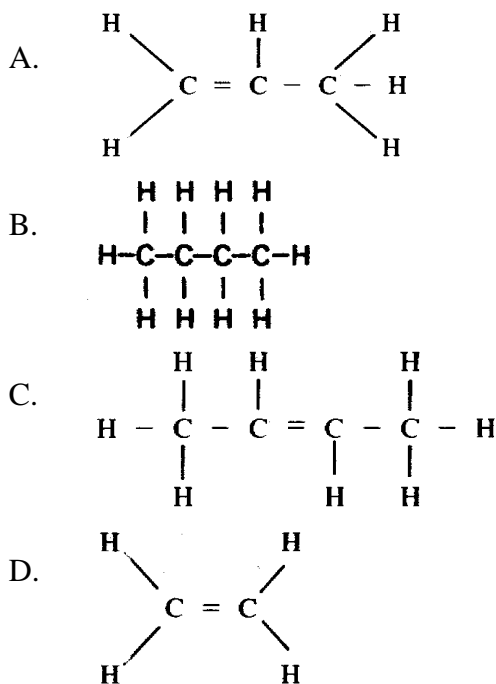


14. Which one of the following is used to test for oxygen gas?

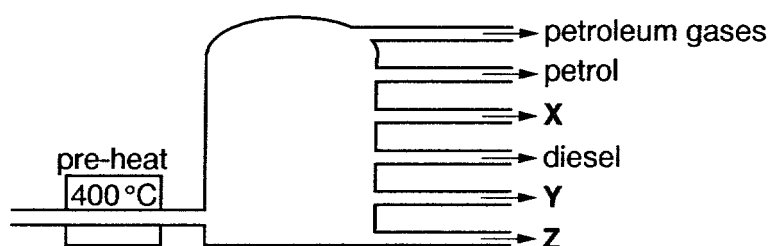


15. Which of the following is a property for all metallic elements?
- A. They conduct electricity in solid state.
  - B. They are usually soluble in water.
  - C. They are solids at room temperature.
  - D. They have high melting points.
16. Iron can be extracted from iron (III) oxide in the blast furnace by reduction with carbon monoxide. The equation for the reaction is shown below:
- $$w\text{Fe}_2\text{O}_3 + x\text{CO} \rightarrow y\text{Fe} + z\text{CO}_2$$
- To balance the equation, the values w, x, y and z must be respectively
- A. 1,3,2,3
  - B. 1,2,2,3
  - C. 1,3,3,2
  - D. 1,2,2,3
17. What is the mass of oxygen in 54g of water ?
- A. 24g
  - B. 48g
  - C. 54g
  - D. 64g
18. Which process produces carbon dioxide and water from poly(ethene)?
- A. addition
  - B. combustion
  - C. fermentation
  - D. polymerisation

19. A hydrocarbon Y (*relative molecular mass* = 42) quickly decolourises bromine solution. Which one of the following is Y likely to be?



20. The diagram shows a section of an oil refinery which separates crude oil into useful fractions.



What are fractions X, Y and Z?

	<b>X</b>	<b>Y</b>	<b>Z</b>
A.	paraffin (kerosene)	bitumen	lubricating oil
B.	lubricating oil	paraffin (kerosene)	bitumen
C.	lubricating oil	bitumen	paraffin (kerosene)
D.	paraffin (kerosene)	lubricating oil	bitumen

~ The End ~

*Please proceed to Paper 4 as soon as you have completed and checked through this paper.*

# The Periodic Table of the Elements

Group											
I	II	III	IV	V	VI	VII	0				
7 Li Lithium 3	9 Be Beryllium 4	1 H Hydrogen 1		11 B Boron 5	12 C Carbon 6	14 N Nitrogen 7	16 O Oxygen 8	19 F Fluorine 9	20 Ne Neon 10	4 He Helium 2	
23 Na Sodium 11	24 Mg Magnesium 12	27 Al Aluminium 13	28 Si Silicon 14	31 P Phosphorus 15	32 S Sulphur 16	35.5 Cl Chlorine 17	40 Ar Argon 18				
39 K Potassium 19	40 Ca Calcium 20	45 Sc Scandium 21	48 Ti Titanium 22	51 V Vanadium 23	52 Cr Chromium 24	55 Mn Manganese 25	56 Fe Iron 26	59 Co Cobalt 27	59 Ni Nickel 27	64 Cu Copper 29	
85 Rb Rubidium 37	88 Sr Strontium 38	89 Y Yttrium 39	91 Zr Zirconium 40	93 Nb Niobium 41	96 Mo Molybdenum 42	101 Tc Technetium 43	101 Ru Ruthenium 44	103 Rh Rhodium 45	106 Pd Palladium 47	108 Ag Silver 47	
133 Cs Caesium 55	137 Ba Barium 56	139 La Lanthanum 57	178 Hf Hafnium * 72	181 Ta Tantalum 73	184 W Tungsten 74	186 Re Rhenium 75	190 Os Osmium 76	192 Ir Iridium 77	195 Pt Platinum 78	197 Au Gold 79	
Fr Francium 87	226 Ra Radium 88	227 Ac Actinium 89									

\* 58 – 71 Lanthanoid series  
+ 90 – 103 Actinoid series

140 Ce Cerium 58	141 Pr Praseodymium 59	144 Nd Neodymium 60	150 Sm Samarium 62	152 Eu Europium 63	157 Gd Gadolinium 64	162 Dy Dysprosium 66	165 Ho Holmium 67	167 Er Erbium 68	169 Tm Thulium 69	173 Yb Ytterbium 70	175 Lu Lutetium 71
232 Th Thorium 90	238 Pa Protactinium 91	238 U Uranium 92	238 Pu Plutonium 94	238 Am Americium 95	238 Cm Curium 96	238 Bk Berkelium 97	238 Es Einsteinium 99	238 Fm Fermium 100	238 Md Mendelevium 101	238 No Nobelium 102	238 Lr Lawrencium 103

Key

a	X
b	

a = relative atomic mass  
X = atomic symbol  
b = proton (atomic) number

The volume of one mole of any gas is 24 dm<sup>3</sup> at room temperature and pressure (r.t.p.)