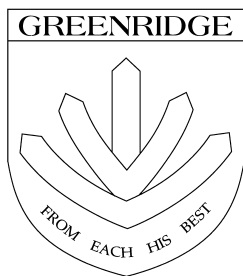


Name : _____ () Class : _____



GreenRidge Secondary School

Preliminary Examination 2002

Subject : Science (5142)
Secondary Five Normal (Academic)
Paper 1

Date : 19 Sep 2002

Duration : 1 h

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INSTRUCTIONS TO CANDIDATES

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

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

There are **40** questions in this section. Answer **all** questions.
Choose the one you consider correct and record your choice in soft 2B pencil on the OMR sheet.

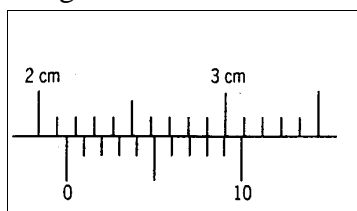
INFORMATION FOR CANDIDATES

Each correct answer is awarded 1 mark.
A copy of the Periodic Table is printed on page 11.

This paper consists of 11 printed pages, including this page.

Answer all the questions. Choose the most suitable answer and shade the corresponding letter (A, B, C or D) on the OMR sheet provided, using soft pencil.

1. What is the reading shown in the scale of the vernier calipers below?

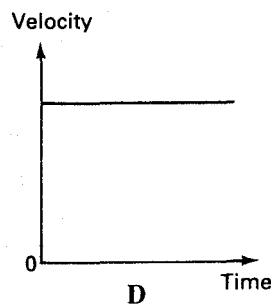
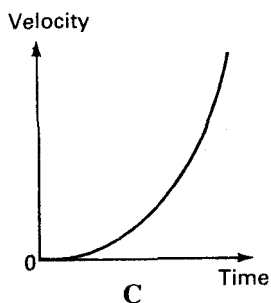
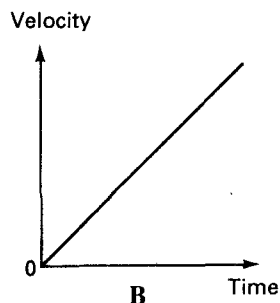
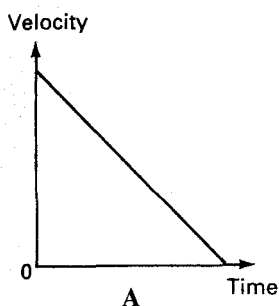


- A. 1.90 cm B. 3.10 cm
C. 2.18 cm D. 3.18 cm

2. The basic S.I. units of length, mass and time are:

	Length	Mass	Time
A.	centimetre	kilogram	second
B.	millimetre	gram	second
C.	centimetre	kilogram	minute
D.	metre	kilogram	second

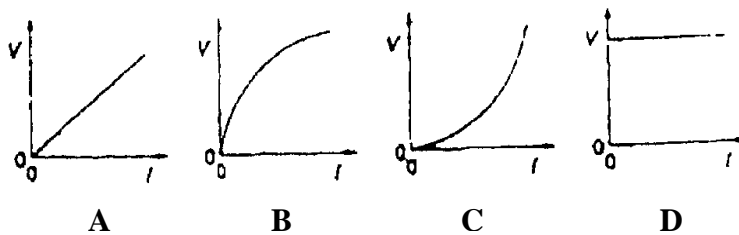
3. Which of the velocity-time graphs below shows motion with an acceleration that is **not** constant?



4. Which statement is **correct**?

- A The mass of a body is the same as its weight.
B The mass of a body depends on its location.
C The mass of a body is constant but its weight can vary.
D The weight of a body is constant.

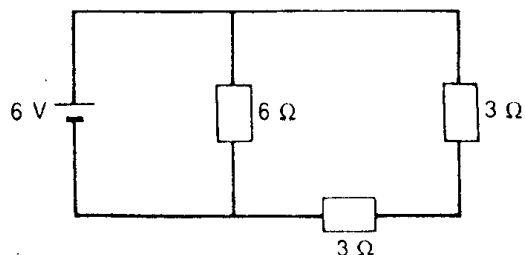
14. Which diagram shows the V/I characteristics graph for a conductor that obeys Ohm's law?



15. The earth wire of an electrical appliance should be connected to the

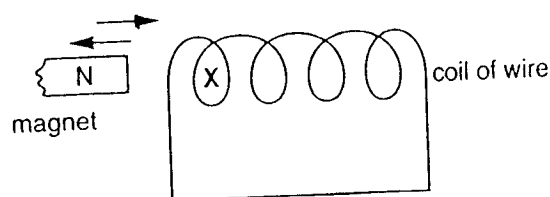
- A Fuse B metal casing
C ON/OFF switch D plastic handle

16. Three resistors are connected as shown below. What is the effective resistance (in ohms) of the circuit?



- A 2.25 B 2.5
C 3 D 3.75

17. The diagram shows a magnet that moves into and out of a coil of wire. What describes the poles produced at position X by the movement of the magnet?



- | | North pole moves in | North Pole moves out |
|---|---------------------|----------------------|
| A | N | S |
| B | N | N |
| C | S | N |
| D | S | S |

18. The three different types of radiation have different ionizing and penetration power. Which of the following is the correct representation?

	Weakest Ionising	Weakest Penetration
A	beta	alpha
B	gamma	beta
C	alpha	gamma
D	gamma	alpha

19. A wave traveling at a speed of 30 ms^{-1} is sent out from a source vibrating at 100Hz. What is the distance between two successive crests of the wave?

A	0.30m	B	0.60m
C	3.33m	D	6.66m

20. Mary wishes to test if metal X and metal Y are magnets or magnetic materials. She tests them with a piece of bar magnet and obtained the following observations.

	Metal X	Metal Y
North pole brought near	Attracted to magnet	Attracted to magnet
South pole brought near	Attracted to magnet	Repelled by magnet

What can be deduced about metal X and Y?

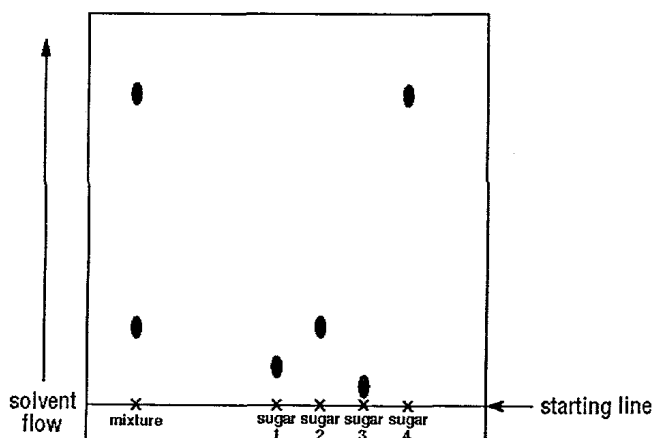
- A** X is a magnet and Y is a magnetic material.
B Y is a magnet and X is a magnetic material.
C Both are magnets.
D Both are magnetic materials.
21. The table shows the physical state of a substance at different temperatures.

Temperature	-30°C	-10°C	-0.5°C	20°C	60°C
Physical State	solid	solid	liquid	liquid	gas

What could the melting point of the substance be?

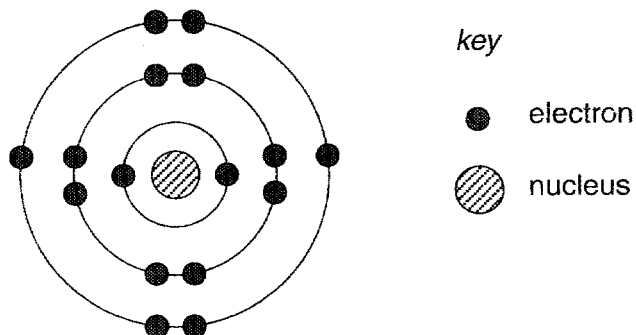
- A.** -20°C
B. -9°C
C. 0°C
D. 20°C
22. Which method would be most suitable for obtaining *salt* from sea-water?
- A.** evaporation
B. filtration
C. distillation
D. fractional distillation

23. A mixture of two sugars was compared with *four* different sugars using chromatography. The results are shown in the diagram.



- Which **two** sugars does this mixture contain?
- A. 1 and 2
B. 2 and 3
C. 2 and 4
D. 3 and 4
24. X is a metal. Which one of the following properties is the best evidence that X is a metal?
- A. X is insoluble in water.
B. X has a high melting point.
C. X conducts electricity only when molten.
D. X conducts electricity in both solid and molten state.
25. When solid iodine is heated, it changes directly to gaseous iodine. What type of force is overcome in the process?
- A. ionic bond
B. inter-molecular forces
C. covalent bond
D. metallic bond
26. Which of the following conducts electricity due to the movement of ions only?
- A. Graphite
B. Iron
C. Brass
D. Hydrochloric acid
27. Isotopes of an element have the following properties **except**
- A. same number of protons
B. same number of neutrons.
C. same number of electrons.
D. same number of electron shells.

28. The diagram represents an atom of an element X.



To which group of the Periodic Table does X belong?

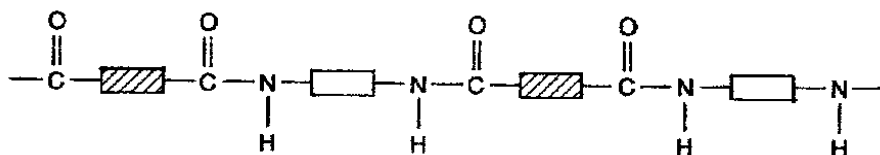
- A. III
B. IV
C. V
D. VI
29. What is the ratio of the volume of 4.0g of hydrogen (H₂) to the volume of 8.0g of methane (CH₄), both volumes at room temperature and pressure?
A. 4 to 1
B. 1 to 4
C. 2 to 1
D. 1 to 2
30. Hydrogen molecules can be broken into atoms.
$$\text{H}_2 \rightarrow \text{H} + \text{H}$$

This reaction is
A. exothermic because chemical bonds are broken.
B. endothermic because chemical bonds are broken.
C. endothermic because chemical bonds are formed.
D. exothermic because chemical bonds are formed.
31. Which catalyst is used for the manufacture of ammonia gas?
A. iron
B. platinum
C. manganese (IV) oxide
D. concentrated sulphuric acid
32. When zinc is reacted with dilute hydrochloric acid, zinc chloride and hydrogen gas are produced. Which one of these comparisons is **not** true?
A. If the concentration of reactant is increased, the rate of reaction will be increased.
B. If the pressure is doubled, the rate of reaction will be doubled.
C. If the temperature the reactions is raised by 10°C, the rate of reaction will be doubled.
D. If the surface area of solid reactants is halved, the rate of reaction will be halved.

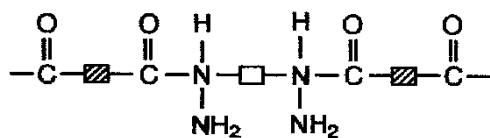
33. Which one of the following is **not** a redox reaction?
- A. $\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$
 - B. $\text{CaO} + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O}$
 - C. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
 - D. $\text{Cu} + \text{S} \rightarrow \text{CuS}$
34. Which of the following does **not** react with dilute hydrochloric acid?
- A. zinc
 - B. zinc hydroxide
 - C. zinc nitrate
 - D. zinc oxide
35. A chemical compound produces a mixture of gases when heated. This gas mixture turns moist blue litmus paper red and relights a glowing splint. What does this mixture contain?
- A. an acidic gas and hydrogen
 - B. an acidic gas and oxygen
 - C. an alkaline gas and hydrogen
 - D. an alkaline gas and oxygen
36. A sample of ammonium sulphate is warmed with aqueous sodium hydroxide. The gas produced will
- A. extinguish a lighted splint with a 'pop' sound.
 - B. relight a glowing splint.
 - C. turn damp red litmus paper blue.
 - D. turn limewater cloudy
37. Metal M is placed between iron and lead in the reactivity series. Which one of the statements about metal M below is most likely to be true?
- A. Metal M can only be extracted by electrolysis.
 - B. Metal M reacts slowly with cold water to produce hydrogen gas.
 - C. Oxides of metal M can be reduced by carbon to give metal M.
 - D. Oxides of metal M is a white solid which readily dissolves in cold water.
38. Coal contains carbon, hydrogen, oxygen, sulphur and nitrogen. Which pollutant from burning coal results in damage to limestone buildings?
- A. ammonia
 - B. carbon monoxide
 - C. carbon dioxide
 - D. sulphur dioxide

39. Which diagram represents the structure of Terylene?

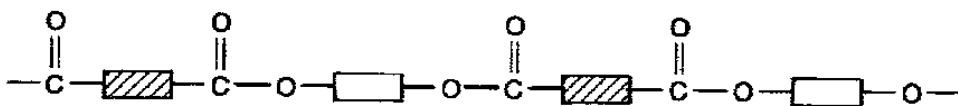
A.



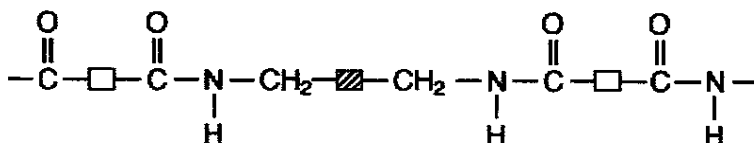
B.



C.

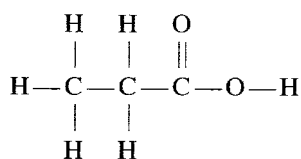


D.

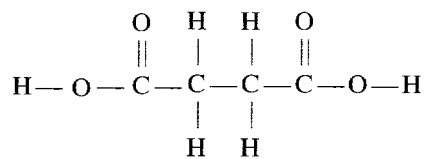


40. Which one of the following compounds can be a monomer used for making a *polyamide*?

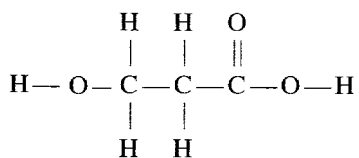
A.



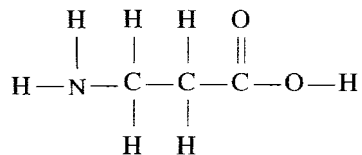
B.



C.



D.



~ The End ~

The Periodic Table of the Elements

		Group														
		I	II	III	IV	V	VI	VII	0							
7 Li Lithium 3	9 Be Beryllium 4	<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="text-align: center;">1 H Hydrogen 1</td> </tr> </table>										1 H Hydrogen 1				
1 H Hydrogen 1																
23 Na Sodium 11	24 Mg Magnesium 12															
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	64 Cu Copper 29	65 Zn Zinc 30	70 Ga Gallium 31	73 Ge Germanium 32	75 As Arsenic 33	79 Se Selenium 34	80 Br Bromine 35	84 Kr Krypton 36
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 Ru Ruthenium 44	103 Rh Rhodium 45	106 Pd Palladium 47	108 Ag Silver 47	112 Cd Cadmium 48	115 In Indium 49	119 Sn Tin 50	122 Sb Antimony 51	128 Te Tellurium 52	127 I Iodine 53	131 Xe Xenon 54
133 Cs Caesium 55	137 Ba Barium 56	139 La Lanthanum 57	178 Hf Hafnium * 72	181 Ta Tantalum 73	184 W Tungsten 74	190 Os Osmium 76	192 Ir Iridium 77	195 Pt Platinum 78	197 Au Gold 79	201 Hg Mercury 80	204 Tl Thallium 81	207 Pb Lead 82	209 Bi Bismuth 83	210 Po Polonium 84	210 At Astatine 85	210 Rn Radon 86
87 Fr Francium	88 Ra Radium	89 Ac Actinium														

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

a	X
b	
c	
d	

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

140 Ce Cerium 58	141 Pr Praseodymium 59	144 Nd Neodymium 60	150 Sm Samarium 62	152 Eu Europium 63	157 Gd Gadolinium 64	159 Tb Terbium 65	162 Dy Dysprosium 66	165 Ho Holmium 67	167 Er Erbium 68	169 Tm Thulium 69	173 Yb Ytterbium 70	175 Lu Lutetium 71
90 Th Thorium	91 Pa Protactinium	92 U Uranium	94 Pu Plutonium	95 Am Americium	96 Cm Curium	97 Bk Berkelium	98 Cf Californium	99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium	103 Lr Lawrencium

The volume of one mole of any gas is 24 dm³ at room temperature and pressure (r.t.p.)