

BELMONT HIGH SCHOOL**MID- COURSE EXAM 2004****2 UNIT CHEMISTRY HSC**NAME STAFF ANSWERS**ANSWER BOOKLET****PART A** Circle the most correct answer

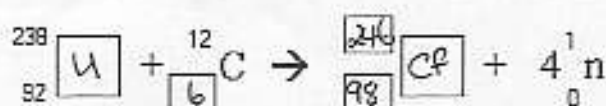
Q1	<input checked="" type="radio"/> A	B	C	D
Q2	A	B	C	<input checked="" type="radio"/> D
Q3	A	<input checked="" type="radio"/> B	C	D
Q4	<input checked="" type="radio"/> A	B	C	D
Q5	A	B	C	<input checked="" type="radio"/> D
Q6	<input checked="" type="radio"/> A	B	C	D
Q7	<input checked="" type="radio"/> A	B	C	D
Q8	A	B	C	<input checked="" type="radio"/> D
Q9	<input checked="" type="radio"/> A	B	C	D
Q10	A	B	<input checked="" type="radio"/> C	D
Q11	A	B	<input checked="" type="radio"/> C	D
Q12	<input checked="" type="radio"/> A	B	C	D
Q13	<input checked="" type="radio"/> A	B	C	D
Q14	A	B	C	<input checked="" type="radio"/> D
Q15	A	B	C	<input checked="" type="radio"/> D

PART B- Complete the following table (26 marks)

a) Petrol is extracted from crude oil by a process called	Fractional distillation
b) The individual units that go to make up a polymer are called	monomer
c) The general formulae for any alkane	C_nH_{2n+2}
d) The name of the polymer made from chloro-ethene	PVC
f) Most polymers are produced by living things and are called	Bio
g) Cellulose is made of monomers called	Glucose
h) Give the name of the biopolymer that you have researched	
i) The molecular formula for glucose is	$C_6H_{12}O_6$
j) Give an example of a non polar liquid organic solvent	Petrol / Kero
k) Complete the sequence methanol, ethanol, propanol	Butanol
l) Identify the functional group for an alcohol	R-OH
m) O..... is the gain of electrons	Oxidation
n) Place in order of reactivity Mg, Cu, Ag, Na	Na, Mg, Cu, Ag
o) What moves through the external circuit of a galvanic cell?	electrons
p) Small cells used to power watches and calculators	Bu lton
q) An ionisation counter used to detect radiation	Geiger
r) The first actinide element that is not naturally occurring	Np
s) Used to produce neutron rich radioisotopes	Nuclear Reactor
t) Name a substance you used to prepare a natural indicator	Red Cabbage
u) An indicator made up of many indicators	Universal
v) The main acid ingredient of vinegar	Acetic
w) The scientific name for caustic soda, a common alkali used in laboratories	Sodium Hydroxide
x) The burning of Sulfur produces	SO_2
y) A French chemist whose principle explains systems in equilibrium	Le Chateliers
z) A government body controlling air quality	EPA

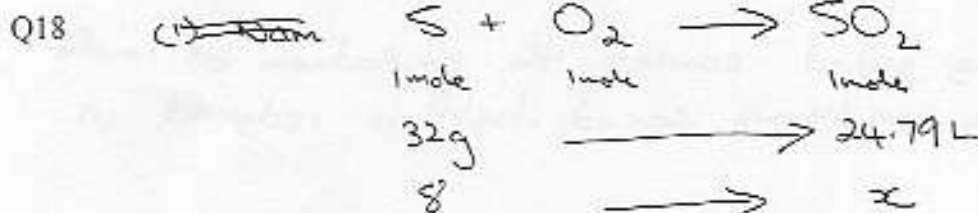
PART C

Q16



2

Q17 (1) Name (2) Description



$$32x = 8 \times 24.79$$

$$x = 6.19 \text{ Litres}$$

Q19 a) • Attach pH probe to logger port 1 (1).

• Set logger for 10 samples / sec

• Set logger for approx 1 min

• Insert probe and press start

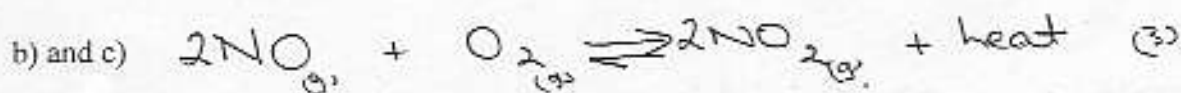
• Determine average value.

(2)

b) 2 acids (1). ie 1/2 mark each.

2 alkalis (1).

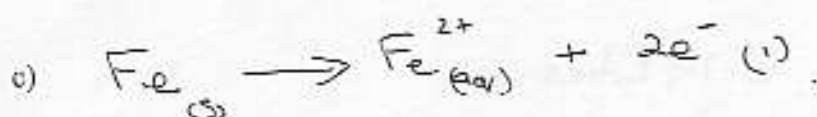
Q20 a) If a change is made to a system in equilibrium the system will alter so as to oppose the change (1)



d) Reaction would proceed in reverse and more reactants would be produced. (1)

21) a) An oxidising agent causes the oxidation of another species. The oxidising agent itself is reduced. (1)

b) Cu^{2+} ions (1)



22) a) (1) Name. (1)

b) i) Textbook - look at relevant chapter - summarise article - acknowledge reference. (1)

ii) Internet - Search engine used - download or cut and paste relevant sections. (1)

iii) Journal or newspaper article. - summarise highlight important sections (1).

c)

- Look at publishing date or web page date.
- Authority on web page, when last updated.
- check with other sources.

23)

Natural Sources

- ① Bacterial decay of organic matter produces H_2S which reacts with O_2 to make SO_2
- ② Volcanos / geysers
- ③ Bushfire smoke,

Sources from Human activities,

- ① Burning of fossil fuels especially coal containing S.
- ② Smelting of Sulfide ores eg Roasting of ZnS .

- Q24 a) Any element that is not made and has an $A+N > 92$
- b) by bombarding the nuclei of heavy atoms with neutrons or the nuclei of other atoms. Usually in nuclear reactors.

c) An isotope of an atom that displays a radioactive decay ie produces α , β or γ rays.

(ii) Cycl or L.A. accelerates charge particles by altering magnetic and electric fields, to very high speeds and collide these particles into target atoms that may absorb these particles or break up due to the collision. Cycl accelerates particles in circles L.A. in straight lines. They produce radio isotopes deficient in neutrons

- d) ^{98}Mo absorbs a neutron to produce radioisotope ^{99}Mo . This isotope decays to make ^{99}Tc and releases a β particle.

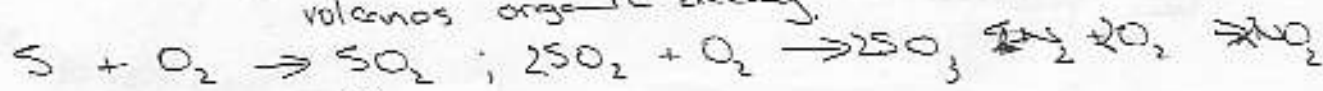
PART C

Q25 a) Zn electrode

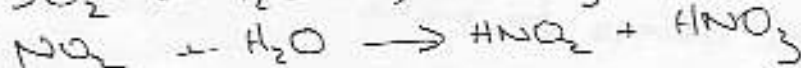
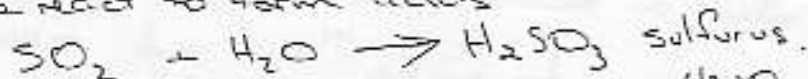
b) oxidation

c) ~~Answer on diagram~~ from the Zn electrode to the Cu electroded) Cu^{2+} are more easily reduced than Zn^{2+} because Cu^{2+} E° values are higher.c) $\text{Zn} \rightarrow \text{Zn}^{2+} + 2e^-$ - Zn electrode $\text{Cu}^{2+} + 2e^- \rightarrow \text{Cu}$ - Cu electrodef) $\text{Zn}_{(s)} + \text{Cu}^{2+}_{(aq)} \rightarrow \text{Zn}^{2+}_{(aq)} + \text{Cu}_{(s)}$ g) $E^\circ_{\text{cell}} = 0.76 + 0.34 = 1.10\text{V}$ h) $\text{Zn} | \text{Zn}^{2+} || \text{Cu} | \text{Cu}^{2+}$ i) ~~Answer on diagram~~ Zn electrode +ve Cu electrode -ve.Q26 Formation - rain with $\text{pH} < 5$ described as acid rain
- results from rain absorbing oxides of S + Neg SO_2 , SO_3 , NO_2

- these are released from fossil fuels, lighting, volcanoes, organic decay.

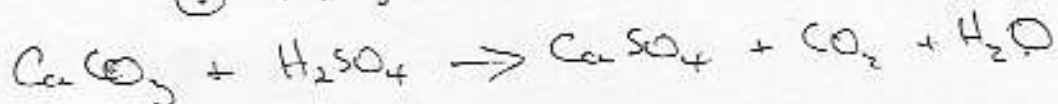


These react to form acids



Effects - 3 main effects.

- ① Surface water - lakes rivers become acidic
- ② Direct damage to plants.
- ③ Damage to metal / stone / marble.



Q27 a) Aim To determine the mass, charges and Vol of CO_2 released when a soft drink is decarbonated.
(1)

b) Procedure

- Weigh an unopened bottle of Coke 600ml.
- Shake bottle to release gas
- Continue to do this till the coke is decarbonated
- reweigh the bottle
- Record the difference in weight.

(3)

c) Equipment Electronic balance.
1 600ml bottle Coke.

d) Results

Original Wt of bottle + coke	= 50.00
Wt of bottle + decarb coke	= 48.00
Mass of CO_2 lost	<u>2.00 g.</u>

Q27 continued

e) Calculations

1 mole CO_2 at 25°C and $100\text{kPa} = 24.79\text{ L}$

$\therefore 44\text{ g}$ occupies 24.79 L

$\therefore 2\text{ g}$ occupies x .

$x = 1.12\text{ L}$ of gas released.

f) Conclusion

2 g of CO_2 was lost this is equivalent to 1.12 L of CO_2 at 25°C and 100kPa .

g) Team or Individual

(1)

Q28 a) $[\text{CO}_2]_g$ decreases equl pushed to replace $\text{CO}_2 g$
 \therefore more $\text{CO}_2 g$ bubbles form solⁿ

or Total pressure decreases \therefore equl pushed to left to increase total pressure ie more $\text{CO}_2 g$ produced.

b) Reaction is exothermic ie Heat is a product.
 \therefore Reaction pushed to the left ie more $\text{CO}_2 g$ produced
and the rate goes flat.

c) Adding citric acid $[\text{H}^+]$ increases $\therefore [\text{H}_2\text{CO}_3]_{aq}$ increases
 \therefore More $\text{CO}_2(g)$ \therefore more CO_2 gas produced
and the rate goes flat.