

## Higher Chemistry Multiple Choice 2004 Worked Answers

- Iodine is a non metal and therefore wont conduct. Silicon dioxide is covalent and potassium fluoride is ionic and will not conduct when solid. Answer **B**
- The Blue colour appears when iron corrodes. As zinc is above iron in the electrochemical series it will donate its electrons to iron. However copper is below iron and therefore the iron will displace the copper and corrode.  
Answer: **C**
- Look at the electron arrangements in the data booklet. The calcium would become  $\text{Ca}^{2+}$  with an electron arrangement 2,8,8 and the sulphide becomes  $\text{S}^{2-}$  with electron arrangement 2,8,8. Answer **A**
- no of  $\text{H}^+$  x volume x concentration = no of  $\text{OH}^-$  x volume x concentration  
 $2 \times 50 \times 0.1 = 1 \times V \times 0.4$   
 $V = 25$  Answer: **A**
- It's just a case of adding the mass up for each pair. Answer **D**
- Answer **C**
- If 0.8 of  $\text{H}_2$  are left then 0.8 of  $\text{I}_2$  will also be left. This means a total of 0.4 moles have converted into  $\text{HI}$ . Answer **B**
- The reaction is taking energy in therefore is endothermic.  $E_a = 120 - 40 = 80$ .  
Answer **D**
- Look at the table of electronegativity in the data booklet. Answer **C**
- Halogens are group 7. Answer **A**
- Look at the table containing the first ionisation energy and see which is the largest. Answer **D**
- $\text{CH}_4$ ,  $\text{CO}_2$  and  $\text{CCl}_4$  are all symmetrical molecules therefore there polarity cancels out. Answer **C**
- $2\text{NO} + \text{O}_2 \rightarrow 2\text{NO}_2$  Answer **A**  
2vol 1vol 2 volt  
1 0.5 1
- 1 mole  $\text{SO}_2 \rightarrow 64.1$  therefore 2 moles  $\text{SO}_2 \rightarrow 128.2$   
8g He  $\rightarrow$  2moles  
Any gas at s.t.p. will have a volume of about 24l per mole. Answer **B**
- $\text{Cu} + 2\text{AgNO}_3 \rightarrow 2\text{Ag} + \text{Cu}(\text{NO}_3)_2$   
1mole 1mole  
63.5 187.5g  
1g 187.5/63.5g  
5g  $(187.5/63.5) \times 5 = 14.76\text{g}$  Answer **D**
- Answer **A**
- Answer **B**
- Count the number of carbon atoms in each suggested answer. Only suggestions with 7 carbon atoms can possibly be correct. Therefore Answer **B**
- Answer **B**
- $\text{CH}_3\text{CH}_2\text{COOH}$  is propanoic acid. Answer **A**
- Answer **D**
- $3\text{H}_2 + \text{N}_2 \rightarrow 2\text{NH}_3$   
3 moles 2moles

6g	34g	
60kg	340kg	% yield = actual/theoretical x 100
		% yield = 80/340 x 100

Answer **A**

23. Answer **D**
24. Only D will allow this. Answer **D**
25. Answer **A**
26. Glycerol is also known as propan-1,2,3-triol. Answer **D**
27. Answer **B**
28. Amino acids. Answer **C**
29. Answer **D**
30.  $X = -393.5 + 283 = -110.5$  Answer **B**
31. Catalysts have no effect on the position of equilibrium as they increase the rate of both the forward and the reverse reaction. They will also have no effect on the enthalpy change. Answer **D**
32. Answer **C**
33. It must be between  $10^{-2}$  and  $10^{-3}$ . Answer **C**
34. Answer **A**
35. Answer **C**
36. NaOH is completely ionised and is a strong acid and therefore has a higher pH and conductivity. Answer **B**
37.  $\text{IO}_3^- + 12\text{H}^+ \rightarrow \text{I}_2 + 6\text{H}_2\text{O}$  Answer **D**
38. Ammonia causes the Mg to lose electrons therefore is an oxidising agent. Answer **C**
39. 
$${}_{93}^{236}\text{Np} \text{ does not go to give } {}_{92}^{238}\text{U} + {}_1^1\text{p}$$
 Answer **B**
40. Nuclear fission is when a heavy nucleus splits up into two daughter nuclei releasing a number of neutrons. Answer **C**