



JABchem



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Past Papers Int 1 Chemistry

2008 Marking Scheme

Grade Awarded	Mark Required		% candidates achieving grade
	(/60)	%	
A	42+	70%	31.4%
B	36+	60%	26.2%
C	31+	52%	19.8%
D	28+	47%	7.9%
No award	<28	<47%	14.7%

Section:	Multiple Choice	Extended Answer
Average Mark:	11.0 /20	26.2 /40

2008 Int 1 Chemistry Marking Scheme

MC Qu	Answer	% Pupils Correct	Reasoning								
1	C	85	<input checked="" type="checkbox"/> A harmful/irritant <input checked="" type="checkbox"/> B poisonous/toxic <input checked="" type="checkbox"/> C corrosive/caustic <input checked="" type="checkbox"/> D flammable								
2	A	59	Burning petrol is a chemical reaction because new chemicals (carbon dioxide and water) are formed during the reaction. Physical changes include: melting, evaporation, condensation, freezing, dissolving.								
3	D	41	<input checked="" type="checkbox"/> A pure compound <input checked="" type="checkbox"/> B pure compound <input checked="" type="checkbox"/> C pure compound <input checked="" type="checkbox"/> D mixture of elements								
4	B	67	Catalysts speed up a chemical reaction without being used up in the reaction. <ul style="list-style-type: none"> If 1g of catalyst at start of reaction then 1g of catalyst will remain at end. 								
5	C	47	Particles size must be different (zinc powder and zinc lump) Temperature (25°C) and concentration (25cm ³ acid + 75cm ³ water) are same								
6	A	35	If nettle sting is acidic, then an alkali is used to neutralise nettle sting <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">backing soda</td> <td style="text-align: center;">lemon juice</td> <td style="text-align: center;">soda water</td> <td style="text-align: center;">vinegar</td> </tr> <tr> <td style="text-align: center;">alkaline</td> <td style="text-align: center;">acidic</td> <td style="text-align: center;">acidic</td> <td style="text-align: center;">acidic</td> </tr> </table>	backing soda	lemon juice	soda water	vinegar	alkaline	acidic	acidic	acidic
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alkaline	acidic	acidic	acidic								
7	A	11	nitric acid + potassium hydroxide \longrightarrow potassium nitrate + water (acid) (alkali) (salt) (water)								
8	D	32	<input checked="" type="checkbox"/> A iron is made by heating iron ore with carbon <input checked="" type="checkbox"/> B silver is made by heating silver ore alone <input checked="" type="checkbox"/> C copper is made by heating copper ore with carbon <input checked="" type="checkbox"/> D reactive metals like aluminium are made by molten electrolysis								
9	B	65	<input checked="" type="checkbox"/> A carbon dioxide gas turns lime water milky <input checked="" type="checkbox"/> B hydrogen gas burns with a 'pop' <input checked="" type="checkbox"/> C nitrogen gas is unreactive and does none of the gas tests <input checked="" type="checkbox"/> D oxygen gas relights a glowing splint.								
10	D	86	Rusting is the corrosion of iron only while corrosion applies to all metals								
11	A	58	<input checked="" type="checkbox"/> A An electrical cell has two different metals in a solution of ions <input checked="" type="checkbox"/> B Solution was no ions so circuit is not complete. <input checked="" type="checkbox"/> C An electrical cell with the same metal will not produce a voltage. <input checked="" type="checkbox"/> D Solution was no ions so circuit is not complete.								
12	C	65	When soap reacts with calcium ions in hard water, an insoluble solid called scum is formed. (Soapless detergents do not form a scum with hard water)								
13	A	60	<input checked="" type="checkbox"/> A Cracking: turning longer hydrocarbons into shorter, more useful hydrocarbons <input checked="" type="checkbox"/> B Distillation: separating liquids with different boiling points <input checked="" type="checkbox"/> C Evaporation: Physical change when a liquid turns into a gas <input checked="" type="checkbox"/> D Filtration: Separating an insoluble solid from a liquid using filter funnel and filter paper								
14	C	62	While PVC plastic is synthetic, washable and thermoplastic, it is the electrical insulating property of PVC which is most important when covering electrical wires.								
15	B	62	<input checked="" type="checkbox"/> A Pesticide: chemical which controls plant pests <input checked="" type="checkbox"/> B Herbicide: chemical which kills weeds <input checked="" type="checkbox"/> C Fungicide: chemical which prevents plant disease <input checked="" type="checkbox"/> D Fertiliser: chemicals which replace essential elements in soil.								

16	D	52	The essential elements for plant growth are: Potassium, Nitrogen and Phosphorus
17	B	41	<input checked="" type="checkbox"/> A Photosynthesis: carbon dioxide and water are used up <input checked="" type="checkbox"/> B Respiration: glucose + oxygen \longrightarrow carbon dioxide + water <input checked="" type="checkbox"/> C Photosynthesis: starch and oxygen are produced <input checked="" type="checkbox"/> D Photosynthesis: starch and oxygen are produced
18	D	45	<input checked="" type="checkbox"/> A This experiment does not bubble the CO ₂ through the lime water and does turn milky <input checked="" type="checkbox"/> B This experiment does not allow the carbon dioxide to escape to CO ₂ stays in flask <input checked="" type="checkbox"/> C This experiment does not allow the carbon dioxide to escape to CO ₂ stays in flask <input checked="" type="checkbox"/> D CO ₂ bubbles through lime water and turns it milky on way through the test tube.
19	C	34	<input checked="" type="checkbox"/> A 1 pint of beer = 2 units of alcohol <input checked="" type="checkbox"/> B 2 glasses of wine = 2 units of alcohol <input checked="" type="checkbox"/> C 2 bottles of alcopop = 4 units of alcohol <input checked="" type="checkbox"/> D 3 measures of spirit (e.g. whisky) = 3 units of alcohol
20	A	97	The number of drug-related deaths increases from 153 to 267 from years 1 to 5.

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Long Qu	Answer	Reasoning	
1a	Mg	Every element on the Periodic Table has a name, symbol and atomic number which are unique to the element.	
1b	carbon	Every element on the Periodic Table has a name, symbol and atomic number which are unique to the element.	
1c		no. of protons = atomic number = 11 mass number = no of protons + neutrons = 11 + 12 = 23	
			11
			23
2a	sodium oxygen	-ide Compound contains the two named elements	
		-ate Compound contains 3 elements (two named elements + oxygen)	
		-ite Compound contains 3 elements (two named elements + oxygen)	
		NB metal always comes first in name	
2b	propene	Monomer ethene propene chloroethene styrene	
		Polymer poly(ethene) poly(propene) poly(chloroethene) poly(styrene)	
2c	chlorine	Chlorine is used to disinfect water and kill bacteria to make water safe to drink Fluoride is added to toothpaste to help keep teeth healthy.	
3a	B D A C	B B must be first step as you have to weigh 50g of milk before doing anything to it	
		D D is next as the liquid volume must be boiled dry	
		A A is next as the liquid has now been boiled off	
		C C must be last step as this is what you are measuring from the question	
3b(i)	place test tube in beaker of hot water	Benedict's solution does not react at room temperature and must be carried out at warm temperatures e.g. 60°C to 100°C	
3b(ii)	brick red/orange	Test for Fat Oily mark on the filter paper	
		Test for Sugars warm Benedict's solution turns brick red/orange	
		Test for Starch Iodine solution turns blue/black	
		Test for Protein Heat with soda lime - gas which turns damp pH paper blue	
4a	silicon	aluminium copper magnesium silicon iron	
		metal metal metal non-metal metal	
4b	low density	Aluminium has a low density so it feels lighter than other metals. Weight is a major factor in aircraft design.	
4c(i)	bulb lights up	If the element used to complete the circuit is a conductor, bulb will light	
4c(ii)	non-conductor	All metals plus carbon(graphite) conduct electricity. Non-metals do not conduct electricity.	
	conductor		
5a	hydrocarbon	hydrocarbon: compound which contains the elements carbon and hydrogen only.	
5b(i)	C ₈ H ₈	Each corner of cube is a black dot carbon (C) ∴ C ₈ Each black dot carbon is joined to a white dot hydrogen (H) ∴ C ₈ H ₈	
5b(ii)	higher melting point than other 8 carbon molecule	Cubane C ₈ H ₈ has a significantly higher melting point than the other C ₈ compounds	
6a	grease dissolves in cleaning chemical	Cleaning chemicals are soluble in both oil/grease and water	
6b	pH 3-6	From chart: Chemicals to make hair shine are acids. Acids have pH below 7 but pH below 3 would be dangerous to use as a shampoo.	
6c	sodium laureth sulphate or magnesium laureth sulphate	From chart: Cleaning Chemicals are usually laureth sulphates From label of shampoo bottle: contains sodium laureth sulphate or magnesium laureth sulphate	
7a	oxygen	Oxygen is required for a substance to burn. From Fire Triangle: Remove oxygen from a fire and it will go out.	
7b(i)	highest % of carbon	Anthracite has a high carbon content (90%) and explains why it produces more energy than the other two.	

7b(ii)	180kg	90% of 200kg = $\frac{90}{100} \times 200\text{kg} = 180\text{kg}$										
7c	they cannot be replaced	Finite resources will run out if they are consumed too much.										
8a	10	Total Other Waste = 25% + 15% + 10% + 40% = 90% Waste from glass = 100% - 90% = 10%										
8b(i)	B	Waste from paper and card = 25% On pie chart, 25% is a $\frac{1}{4}$ pie \therefore Pie B										
8b(ii)	waste plant material	Pie C is less than 25% (i.e. $\frac{1}{4}$ pie) \therefore Pie C cannot be other waste or paper & card Pie C is more than half a $\frac{1}{4}$ pie \therefore Pie C is 15% and not 10% \therefore Pie C is Waste Plant Material										
8c(i)	one from: plastic, glass, paper, metal tins, plant material	plastic, glass, paper, metal tins and plant material can all be recycled.										
8c(ii)	methane or biogas	The main gas found in biogas is methane. Biogas is formed when plant material and left over food decompose (break down).										
9a	makes food last longer	<table border="1"> <thead> <tr> <th>Food Additive</th> <th>Reason for Using Additive</th> </tr> </thead> <tbody> <tr> <td>Food Colouring</td> <td>To improve appearance/colour of food</td> </tr> <tr> <td>Preservatives</td> <td>To improve keeping/preserving qualities of food</td> </tr> <tr> <td>Vitamins & Minerals</td> <td>To improve nutritional value of food</td> </tr> <tr> <td>Flavourings</td> <td>To improve flavour of food</td> </tr> </tbody> </table>	Food Additive	Reason for Using Additive	Food Colouring	To improve appearance/colour of food	Preservatives	To improve keeping/preserving qualities of food	Vitamins & Minerals	To improve nutritional value of food	Flavourings	To improve flavour of food
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9b	sorbic acid	Last sentence of 2 nd paragraph of passage.										
9c	hydrocarbons	Last sentence of 3 rd paragraph of passage.										
9d	SO ₂	<table border="1"> <thead> <tr> <th>Prefix</th> <th>Mono-</th> <th>Di-</th> <th>Tri-</th> <th>Tetra</th> </tr> </thead> <tbody> <tr> <td>Meaning</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </tbody> </table>	Prefix	Mono-	Di-	Tri-	Tetra	Meaning	1	2	3	4
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10a(i)	provide energy	<table border="1"> <thead> <tr> <th>Food Type</th> <th>Used by the Body for</th> </tr> </thead> <tbody> <tr> <td>Protein</td> <td>growth and repair of body tissues</td> </tr> <tr> <td>Carbohydrate</td> <td rowspan="2">energy</td> </tr> <tr> <td>Fat</td> </tr> <tr> <td>Fibre</td> <td>keeps gut working properly and prevents constipation</td> </tr> </tbody> </table>	Food Type	Used by the Body for	Protein	growth and repair of body tissues	Carbohydrate	energy	Fat	Fibre	keeps gut working properly and prevents constipation	
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10a(ii)	to reduce obesity or heart disease	A diet with too much fat can lead to obesity (being overweight). Too much saturated fat in the diet can lead to heart disease.										
10b(i)	to keep the gut working well	<table border="1"> <thead> <tr> <th>Food Type</th> <th>Used by the Body for</th> </tr> </thead> <tbody> <tr> <td>Protein</td> <td>growth and repair of body tissues</td> </tr> <tr> <td>Carbohydrate</td> <td rowspan="2">energy</td> </tr> <tr> <td>Fat</td> </tr> <tr> <td>Fibre</td> <td>keeps gut working properly and prevents constipation</td> </tr> </tbody> </table>	Food Type	Used by the Body for	Protein	growth and repair of body tissues	Carbohydrate	energy	Fat	Fibre	keeps gut working properly and prevents constipation	
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10b(ii)	3.6g	1.8g of Fibre in 100g burger \therefore 3.6g of Fibre in 200g burger										
11a	light energy/sunlight	carbon dioxide + water $\xrightarrow[\text{chlorophyll}]{\text{light energy}}$ glucose + oxygen										
11b	carbon dioxide	carbon dioxide + water $\xrightarrow[\text{chlorophyll}]{\text{light energy}}$ glucose + oxygen										
11c	decreases	From line graph: As temperature increase, solubility decreases.										