Ideal Gas Molecule

Mark Scheme

Level	IGCSE(9-1)
Subject	Physics
Exam Board	Edexcel IGCSE
Module	Double Award (Paper 1P)
Topic	Solids, Liquids and Gases
Sub-Topic	Ideal Gas Molecules
Booklet	Mark Scheme

Time Allowed: **24 minutes**

Score: **/20**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	775%	70%	60%	55%	50%	<50%

Question number	Answer	Notes	Marks
1 a	Any FIVE from: MP1. Energy (transferred) from the sun; MP2. Air over the land is heated ; MP3. Warmer air over land expands; MP4. Air becomes less dense; MP5. Therefore rises (**must** have connection); MP6. Cooler air over sea becomes denser; MP7. Cooler air over sea sinks; MP8. Air (from over the sea) moves inland to replace rising air;	no mark for bald convection current land heats up air reject for 1 mark • particles expand and /or become less dense can **only** be awarded if MP3 or MP4 is given ignore • heat rises	5 1
b	MP1. Example of a larger particle given: e.g. ➢ smoke particles ➢ pollen MP2. Idea that larger particles move with random motion; MP3. Idea of collisions with smaller (invisible) particles;	Ignore • air/water particles move with random motion	1 1

(Total for Question 1 = 8 marks)

Question number	Answer	Notes	Marks
2	Any five of: MP1. the air (molecules are/is) warmed / heated (by the coal fire); MP2. air expands / molecules move apart; MP3. air becomes less dense; MP4. **hot** air or **less dense** air rises; MP5. cooler air (from outside the furnace) displaces warm air; MP6. (above the chimney) air cools / contracts / becomes more dense; MP7. **cooled** air falls; MP8. Process (of convection) is repeated / continuous;	NB 'convection' is in the stem allow another gas for air -1 for explanations which include the idea that the air particles become less dense/air particles expand/eq	5

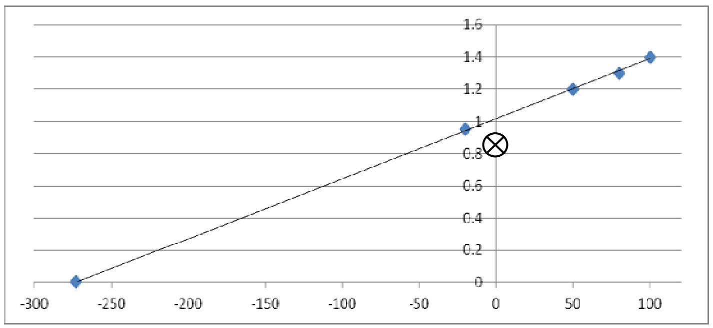
Total 5 marks

Question number		Answer	Notes	Marks
3 (a)		<table><tr><td>temperature</td><td>point of nitrogen</td><td>boiling point of water</td></tr><tr><td>in °C</td><td>-196</td><td></td></tr><tr><td>in Kelvin</td><td></td><td>373</td></tr></table> one mark for each correct;;	ignore -273	2

www.igexams.com

<table>
<tr><td>3</td><td>(b</td><td>(i)</td><td></td><td>Plotting to nearest half-square (minus one for each plotting error, up to max 2 marks) ;;

line of best fit that intersects x-axis between -250 and -300;</td><td rowspan="2">
<table>
<tr><th>Temperature in °C</th><th>Volume in litres</th></tr>
<tr><td>– 20</td><td>0.95</td></tr>
<tr><td>0</td><td>0.85</td></tr>
<tr><td>50</td><td>1.20</td></tr>
<tr><td>80</td><td>1.30</td></tr>
<tr><td>100</td><td>1.40</td></tr>
</table>
</td><td>3</td></tr>
<tr><td></td><td></td><td>(ii)</td><td></td><td>point (0, 0.85) circled or otherwise indicated;

 
</td><td>1</td></tr>
<tr><td colspan="3">b(iii)</td><td></td><td>Reading from graph to nearest small square (±5 degrees);</td><td></td><td>1</td></tr>
</table>