

Question Number	Answer	Mark
1(a)	B ;	(1)

Question Number	Answer	Mark
1(b)	<ol style="list-style-type: none"> 1. {no / little / eq} change in pre-monsoon temperature, post-monsoon has risen / eq ; 2. idea that both {fluctuate / eq } ; 3. idea that {fluctuations / eq} match each other ; 4. reference to {fluctuations / changes} {within / less than / eq} 1°C ; 5. reference to a particular change in both e.g. both decreased between 1800 to 1850 ; 6. Credit correct manipulation of figures to compare pre-monsoon and post-monsoon changes units needed ; 7. idea that the range of (mean) temperatures is greater OR greater fluctuations, in post-monsoon period ; 	(3)

Question Number	Answer	Mark
1(c)(i)	<ol style="list-style-type: none"> 1. idea of {extrapolating / eq} data ; 2. idea of use for {modelling / investigation of correlations} ; 3. idea of providing evidence for global warming ; 4. idea of using this data along with data from other sources ; 	(3)

Question Number	Answer	Mark
1(c)(ii)	<ol style="list-style-type: none"> 1. Idea that there is not enough data ; 2. idea that data has only been collected from Nepal ; 3. reference to {no way of confirming data / no proof / not reliable} ; 4. idea of { fluctuations too great / no real trend} ; 5. idea that means are a poor representation of raw data ; 6. reference to {scatter / spread / eq} (of raw data) is indicator of reliability ; 7. idea that method of estimated temperature from growth rings is questionable / eq ; 8. other environmental changes (affecting trees)not taken into account / eq ; 	(3)

Question Number	Answer	Mark
1(d)	<p>Any one from:</p> <ol style="list-style-type: none"> 1. (estimates of) carbon dioxide levels (in air) 2. (pollen) from peat 3. temperature records ; 	(1)

Question Number	Answer	Mark
2(a)(i)	<ol style="list-style-type: none"> 1. reference to {metabolism / named example / eq} {stops / is slow / eq} ; <p>(below 0°C)</p> <ol style="list-style-type: none"> 2. enzymes are inactive / cells disrupted / eq ; <ol style="list-style-type: none"> 3. reference to cause of {inactivity / cell disruption} e.g. water freezes, lower kinetic energy ; <p>(above 40°C)</p> <ol style="list-style-type: none"> 4. enzymes {denature / change 3D shape / eq} ; 5. reference to consequences of denaturation e.g. fewer enzyme-substrate complexes possible, change in active site, change in bonding ; 	(2)

Question Number	Answer	Mark
2(a)(ii)	<ol style="list-style-type: none"> 1. (carbon dioxide and / or methane) are greenhouse gases / eq ; 2. which {absorb / trap / eq} {heat / infra red / IR / long wave} (radiation) / eq ; 3. {reflected / (re)radiated} from the Earth's surface / eq ; 4. prevent {heat / infra red / IR / long wave / eq} (radiation) escaping ; 5. idea of temperatures maintained higher (than they would be) ; 	(3)

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2(a)(iii)	<table border="1"> <thead> <tr> <th>Technique</th> <th>Could provide evidence</th> <th>Would not provide evidence</th> </tr> </thead> <tbody> <tr> <td>Amniocentesis</td> <td></td> <td>✓</td> </tr> <tr> <td>Dendrochronology</td> <td>✓</td> <td></td> </tr> <tr> <td>Peat-bog pollen analysis</td> <td>✓</td> <td></td> </tr> <tr> <td>Potassium-argon dating</td> <td></td> <td>✓</td> </tr> </tbody> </table>	Technique	Could provide evidence	Would not provide evidence	Amniocentesis		✓	Dendrochronology	✓		Peat-bog pollen analysis	✓		Potassium-argon dating		✓	(2)
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* 2(b) Q C	<p>(QWC - Spelling of technical terms (<i>shown in italics</i>) must be correct and the answer must be organised in a logical sequence)</p> <ol style="list-style-type: none"> 1. carbon dioxide produced {by using / in production of / eq} fossil fuels / eq ; 2. no (direct) evidence that increased carbon dioxide leads to global warming / eq ; 3. reference to carbon dioxide released from {other processes / named process} ; 4. idea of removal of {carbon sinks / named example / eq} (also) leads to increase in carbon dioxide ; 5. stated example of any other greenhouse gas released from another source e.g. CFC, water vapour, methane ; 6. description of source e.g. ruminant animals, paddy fields, melting ice, clearance of peat land ; 7. idea of natural {cycles / events / phenomena / eq} may be involved (in global warming) e.g. solar, volcanoes ; 8. idea of evidence from past is being used ; 9. idea of {(past evidence) is not in indicator of future events / limitations of (climatic) models} ; 10. idea that scientists may be biased ; 11. description of bias e.g. employed by {company / country} with vested interest, self promotion ; 12. specific example of problem with / disadvantage of} alternative source of energy ; 	(6)

Question Number	Answer	Mark
3 (a) (i)	<p>Any three from:</p> <ol style="list-style-type: none"> 1. length (of fibre) / eq ; 2. diameter (of fibre) / eq ; 3. temperature / eq ; 4. fibre came from the same source / eq ; 5. stored for the same length of time / eq ; 6. same way of applying the {masses / knots / eq} ; 7. same humidity / eq ; 8. water content of fibre / level of drying ; 	max (3)

Question Number	Answer	Mark
3(a)(ii)	<ol style="list-style-type: none"> 1. {all / four} sets of results added together ; 2. divided by 4 / eq ; 	(2)

Question Number	Answer	Mark
3(b)	idea that break mass would be to the nearest 50 grams (rather than 100 grams) / reference to smaller percentage error ;	(1)

Question Number	Answer	Mark
3(c)	cannot land on {foot / person / eq} / cannot cause injury ;	(1)

Question Number	Answer	Mark
3 (d) (i)	(sample 2) anomalous / outlier / does not fit the {trend / pattern} ;	(1)

Question Number	Answer	Mark
3 (d) (ii)	<ol style="list-style-type: none">1. oil is a {non-renewable / finite / eq} (resource) ;2. (plant fibres) can be regrown / replanted / eq (so is sustainable) ;3. ref to time scale ;	max (2)

Question Number	Answer	Mark
4(a)(i)	<ol style="list-style-type: none"> 1. {carbon dioxide and methane / both / they / eq} are greenhouse gases ; 2. {trap / absorb} {heat / infra red / long wave radiation / eq} / eq ; 3. idea of reflected from Earth's surface / re-radiation ; 4. mean temperature of Earth's surface increases / eq ; 	<p>maximum (3)</p>

Question Number	Answer	Mark
4(a)(ii)	appropriate comment on changes in production of gases e.g. higher estimate assumes no change in production of gases / lower estimate takes into account reduction in carbon emissions ;	(1)

Question Number	Answer	Mark
4(b)(i)	<ol style="list-style-type: none"> 1. (in 2000) range of mean temp means that both males and females hatch / eq ; 2. as temperature rises {more males / fewer females} (will hatch) / eq ; 3. therefore reproduction rate falls ; 4. leading to {fall in population / extinction / eq} ; 5. if temperature rises above 22°C {only males / no females} will hatch / eq ; 6. lower estimate never reaches point where only males hatch / eq ; 	<p>maximum (4)</p>

Question Number	Answer	Mark
4(b)(ii)	<ol style="list-style-type: none"> 1. fewer {prey / eq} eaten (by tuataras) / eq ; 2. {prey /eq} increase (in number) ; 3. other {carnivores / eq} may increase / eq ; 4. because less competition for food (from tuataras) / eq ; 5. predator of tuatara might {decrease / eat other prey / migrate} / eq ; 	<p style="text-align: right;">maximum (2)</p>