

Question number	Answer	Notes	Marks
1 (a) (i)	fungi / fungus;	allow phonetic spelling eg funghi	1
(ii)	no <u>oxygen</u> ;	ignore no air	1
(iii)	glucose; $\longrightarrow$ ethanol/alcohol + carbon dioxide;	allow 1 for chemical symbols	2
(b) (i)	steam / radiation / high temperature / disinfectant / ethanol / washed in hot water / eq;		1
(ii)	remove pathogens / bacteria / microorganisms / eq;	ignore prevent competition / prevent contamination	1
(c) (i)	<u>amylase</u> / <u>maltase</u> ;	ignore amylose / maltose	1
(ii)	<u>maltose</u> / <u>glucose</u> ;		1
(d)	1. less food / less glucose / less maltose; 2. (increase in) ethanol / alcohol;	ignore less barley ignore beer	2

Total 10 marks

Question number	Answer	Notes	Marks
2 (a)	<ol style="list-style-type: none"> <li>1. before and after exercise;</li> <li>2. breaths per minute;</li> </ol>	<p>allow interchangeable rows /columns ignore breathing rate no credit for graph</p>	2
(b)	<ol style="list-style-type: none"> <li>1. muscle(s);</li> <li>2. inspiration;</li> <li>3. oxygen required;</li> <li>4. remove lactic acid;</li> <li>5. oxygen debt;</li> <li>6. remove carbon dioxide;</li> </ol>		4
(c)	<ol style="list-style-type: none"> <li>1. repeat / use more people / eq;</li> <li>2. measure breathing rate during exercise;</li> <li>3. somebody else / machine / data logger / spirometer count breaths / eq;</li> <li>4. run at same speed / for same time same distance / run on treadmill / eq;</li> </ol>		2

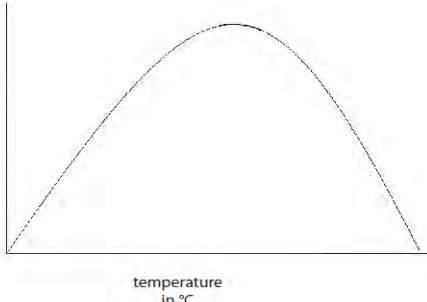
Total 8 marks

Question number	Answer	Notes	Marks
3 (a)	1. repeated / 3 readings / 3 times / average / more than once / eq; 2. similar pattern for red / for green); 3. anomaly ignored in calculation of average for blue light;		Max 2
(b)	measuring cylinder / syringe / scale on the side / eq;	Ignore measure volume	1
(c)	colour / wavelength of light;	Light alone = 0	1
(d)	1. mass of plant / size of plant / length of plant / amount of plant; 2. species of plant / type of plant / same plant; 3. age of plant; 4. temperature (of water) / room temperature; 5. mass/amount of sodium hydrogen carbonate / conc. of carbon dioxide / eq; 6. volume/amount of water / volume of indicator / eq; 7. light intensity / light duration / eq;	Ignore heat Same size test tube/beaker = 0 Ignore time Ignore same funnel exit	max 3

Question number	Answer	Notes	Marks
4 (a)	(yeast) glucose ONLY;  alcohol/ethanol + carbon dioxide (+ energy) ONLY;	Allow if $C_6H_{12}O_6$  Allow $C_2H_5OH$ and $CO_2$	2
(b)	limiter; (clear to) cloudy / (clear to) milky / eq;  or  hydrogen carbonate indicator; (orange to) yellow / eq;		2 max
			Total 4 marks

Question number	Answer	Notes	Marks
5(a)	1. bronchitis; 2. cil (ted cells) anaesthetised / damaged / eq; 3. cteria / pathogens / microorganisms; 4. c cer / carcinogens / tumour; 5. tar; 6. em ysema; 7. ss surface area / less gas exchange / less diffusion / eq; 8. i a that <u>alveoli</u> digested / damaged / fused / eq;	Ignore infection          lower SA of <u>alveoli</u> = 2 <u>alveoli</u> alone = 0	max 5
(b)	1. r blood cells; 2. xy)haemoglobin / carboxyhaemoglobin; 3. ss oxygen; 4. ( ss) respiration / metabolism / energy / ATP;		max 3

Total 8 marks

Question number	Answer	Notes	Marks
6 (a)	keep out oxygen; <u>anaerobic</u> / prevent <u>aerobic</u> idea / eq;	respiration alone gets no credit	2
(b) (i)	 <p>rate of carbon dioxide production in bubbles per minute</p> <p>temperature in °C</p> <p>starts low and rises; peak / level / rise less steep; down;</p>	inverted = 0	3
(ii)	carbon dioxide / CO <sub>2</sub> (production);		1
(iii)	temperature;		1
(c)	<p>volume of glucose; concentration / mass of glucose;</p> <p>mass / volume / number / of yeast; species / type of yeast; pH of <u>solution</u>;</p>	<p>allow amount / quantity</p> <p>ignore volume of water in bath ignore room temperature ignore ref to oxygen ignore ref to oil</p>	2
(d)	repeat / eq;		1
(e)	volume of gas / measuring cylinder / syringe / eq;		1

Question number	Answer	Notes	Marks
6 (f)	glucose; → ethanol/alcohol; + carbon dioxide;	ignore yeast on left hand side of equation but reject if any other substance used ignore energy / heat allow symbols only if correct eg CO <sub>2</sub> = 0 CO <sub>2</sub> = 1	3

**Total 14 marks**