

## Voice of the Genome -3

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

Time:

Total Marks Available:

Total Marks Archived:

Level: Edexcel A level Biology

Subject: Biology

Exam Board: Pearson Edexcel Level 3 GCE AS and A level Biology A (Salters-Nuffield) and also

Pearsons Edexcel AS and A Level Biology B (9BI0) - Is however suitable for use by AS and A

level Biology Students of other Boards

Topic: Voice of the Genome -3

Type: Mark Scheme

To be used by all students preparing for Edexcel AS and A level Biology A and Biology B - Students of other Boards may also find this useful



## Mark Scheme

Q1.

Question Number	Answer	Additional Guidance	Mark
	<p>A description that makes reference to the following:</p> <ul style="list-style-type: none"><li>• vesicles (containing hormone) (1)</li><li>• fuse with the cell (surface) membrane (of fat cells) / by exocytosis (1)</li></ul>		(2)

Q2.

Question Number	Acceptable Answer	Additional Guidance	Mark
	<p>A description that makes reference to the following:</p> <ul style="list-style-type: none"><li>• fluid refers to the movement of the phospholipids in the plane of the membrane (1)</li><li>• mosaic refers to the random association of proteins (of different shapes and sizes) within the membrane (1)</li></ul>		(2)



## EXAM PAPERS PRACTICE

Q3.

Question Number	Answer	Additional guidance	Mark									
	<p>An answer that makes reference to the following</p> <ul style="list-style-type: none"><li>• correct genetic diagram used to determine genotypes of offspring (1)</li><li>• correct probability 0.5 linked to correct genotypes of offspring (1)</li></ul>	<p>e.g.</p> <table border="1"><tr><td></td><td>S</td><td>s</td></tr><tr><td>s</td><td>Ss</td><td>ss</td></tr><tr><td>s</td><td>Ss</td><td>ss</td></tr></table> <p>Ss and ss</p> <p>ALLOW 50% / <math>\frac{1}{2}</math> / 1 in 2</p>		S	s	s	Ss	ss	s	Ss	ss	<p>(2)</p>
	S	s										
s	Ss	ss										
s	Ss	ss										

# EXAM PAPERS PRACTICE



## EXAM PAPERS PRACTICE

Q4.

Question Number	Answer	Additional guidance	Mark
	<p>An answer that makes reference to the following:</p> <ul style="list-style-type: none"><li>• 0.5 probability for being { same sex / female} (1)</li><li>• person 1 is heterozygous for MPS 1 (1)</li><li>• (therefore) person 2 has a 0.75 probability of having same phenotype as person 1 for MPS 1(1)</li><li>• therefore probability of being female and nothaving MPS 1 will be 0.375 (1)</li></ul>	<p>ALLOW 50% for 0.5</p> <p>ALLOW detail of proof of phenotype of person 1 e.g. does not show condition therefore has to have one dominant allele but (at least) one daughter has condition so received a recessive allele from person 1</p> <p>ALLOW carrier for heterozygous</p> <p>ALLOW 75% for 0.75</p> <p>ALLOW <math>\frac{3}{8}</math> or 37.5% for 0.375</p>	<p>(4)</p>



## EXAM PAPERS PRACTICE

Q5.

Question Number	Answer	Mark
	<p>Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme.</p> <p>The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant.</p> <p>Indicative content</p> <p>For DNA</p> <ul style="list-style-type: none"><li>• Double stranded so more stable</li><li>• Allows for a template strand</li><li>• Larger as includes promotor / site for transcription factors to bind</li></ul> <p>For mRNA</p> <ul style="list-style-type: none"><li>• Ribose rather than deoxyribose <u>and</u> uracil rather than thymine</li><li>• Smaller as not bound to other genes / fewer bases (minimum of 396)</li><li>• So can {exit the nucleus / move through the nuclear pore}</li><li>• Single-stranded</li><li>• So {bases / codon} exposed to (tRNA's with) complementary anticodons / bases can bind</li><li>• Amino acids {brought/joined} in the correct sequence</li><li>• Removal of introns / post-transcriptional modification</li></ul>	<p>(6) Exp</p>



## EXAM PAPERS PRACTICE

Level 0	Marks	No awardable content	Additional guidance
Level 1	1-2	<p>An explanation may be attempted but with limited interpretation or analysis of the scientific information with a focus on mainly just one piece of scientific information.</p> <p>The explanation will contain basic information with some attempt made to link knowledge and understanding to the given context.</p>	Basic description of differences between DNA and mRNA
Level 2	3-4	<p>An explanation will be given with occasional evidence of analysis, interpretation and/or evaluation of both pieces of scientific information.</p> <p>The explanation shows some linkages and lines of scientific reasoning with some structure.</p>	Reasons provided for differences in structure of DNA and mRNA.
Level 3	5-6	<p>An explanation is made which is supported throughout by sustained application of relevant evidence of analysis, interpretation and/or evaluation of both pieces of scientific information.</p>	Explanation for differences in the gene described and the mRNA – greater number of bases in DNA than in the mRNA.
		<p>The explanation shows a well-developed and sustained line of</p>	
		<p>scientific reasoning which is clear and logically structured.</p>	Reference to removal of introns and post transcriptional changes to RNA before it is translated.



## EXAM PAPERS PRACTICE

Question Number	Answer	Additional guidance	Mark
(i)	<ul style="list-style-type: none"><li>correct calculation of <math>Q_{10}</math> value</li></ul>	<u>Example of calculation</u> $(240 \div 80 =) 3$	(1)

Question Number	Answer	Additional guidance	Mark
(ii)	<p>An explanation that makes reference to three of the following:</p> <ul style="list-style-type: none"><li>(between <math>20^{\circ}\text{C}</math> and <math>30^{\circ}\text{C}</math>) there is more kinetic energy available (1)</li><li>therefore there will be more frequent collisions (between enzyme and substrate) (1)</li><li>more enzyme-substrate complexes formed (1)</li><li>(the <math>Q_{10}</math> value indicates) the activity triples with the <math>10^{\circ}\text{C}</math> temperature rise (1)</li></ul>	ALLOW more frequent collisions between catalase and hydrogen peroxide	(3)

Question Number	Answer	Additional guidance	Mark
(iii)	<p>An explanation that makes reference to two of the following:</p> <ul style="list-style-type: none"><li><math>Q_{10}</math> value is less than 1.0 (1)</li><li>because the enzyme is denatured (1)</li><li>therefore no increase in formation of enzyme-substrate complexes / substrate no longer fits active site (1)</li></ul>	ALLOW $Q_{10}$ value of 0.59  ALLOW fewer enzyme-substrate complexes formed	(2)



## EXAM PAPERS PRACTICE

Q7.

Question Number	Answer	Mark
(i)	<p><b>The only correct answer is B Bb and Bb</b></p> <p><i>A is not correct because the parent who is bb would have Batten disease</i></p> <p><i>C is not correct because neither parent has the b allele</i></p> <p><i>D is not correct because the parent who is bb would have Batten disease and the parent who is BB would not have the b allele</i></p>	(1)

Question Number	Answer	Additional guidance	Mark
(ii)	<p>An answer that makes reference to the following:</p> <ul style="list-style-type: none"><li>• correct genetic diagram with reference to offspring genotypes (1)</li><li>• correct probability of inheriting Batten disease (1)</li></ul>	<p>e.g. BB, Bb, Bb and bb</p> <p>1 in 4 / 25% / 0.25</p> <p>IGNORE ratios</p>	(2)

# EXAM PAPERS PRACTICE





Q8.

Question Number	Acceptable Answer	Additional Guidance	Mark
<b>(i)</b>	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"><li>• a (random) change in the sequence of bases in the DNA (1)</li><li>• involving { deletion / substitution / addition } of a base (1)</li><li>• this affects the triplet code / changes sequence of amino acids in the enzyme molecule (1)</li><li>• change in shape of active site (1)</li></ul>		<b>(3)</b>



## EXAM PAPERS PRACTICE

Question Number	Acceptable Answer	Additional Guidance	Mark
<b>(ii)</b>	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"><li>the severity of symptoms is related to the proportion of mitochondria with damaged DNA in the mother only (1)</li><li>because (the child's mitochondria) are derived from the { oocyte / egg cell } (1)</li><li>mitochondria in sperm do not enter the egg on fertilisation (1)</li></ul>		<b>(3)</b>

## Q9. EXAM PAPERS PRACTICE

Question Number	Answer		Mark
<b>(a)</b>	<ol style="list-style-type: none"><li>{scientific / peer reviewed} {papers / journals / magazines / article} ;</li><li>(scientific) {conferences / lecture / forums} ;</li><li>media reports ;</li></ol>	3. e.g. TV, radio. newspaper ' internet	<b>(2)</b>



## EXAM PAPERS PRACTICE

Question Number	Answer	Additional Guidance	Mark
*(b)(i)	(QWC – spelling of technical terms must be correct and the answer must be organised in a logical sequence)	<b>QWC focussing on spelling</b>	
	<ol style="list-style-type: none"><li>1. idea of using <i>proteomics</i> (to study protein);</li></ol> <p><b>Any 5 from :</b></p> <ol style="list-style-type: none"><li>2. idea of using DNA {<i>profiling / fingerprinting</i>} (to study DNA) ;</li><li>3. idea of obtaining {<i>tissue / cell</i>} sample from tomcod ;</li><li>4. multiple copies of DNA made / eq ;</li><li>5. using {PCR / <i>polymerase chain reaction</i>} ;</li><li>6. ref to <i>restriction {enzymes / endonucleases}</i> to produce DNA {<i>fragments / eq</i>} ;</li><li>7. reference to (<i>gel</i>) <i>electrophoresis</i> ;</li><li>8. idea of {loading / eq} the DNA onto the {<i>gel / named gel</i>};</li><li>9. idea that an {<i>electric current / charge</i>} is applied ;</li><li>10. reference to use of {<i>dye / fluorescent staining / UV light / Southern blotting / gene probes / radioactive labelling / eq</i>};</li></ol>	<p>4. IGNORE refs to amplification, large amounts</p> <p>8. e.g. <i>agarose, agar</i></p> <p>9. ACCEPT apply <i>potential difference</i></p>	<b>(6)</b>



## EXAM PAPERS PRACTICE

Question Number	Answer	Additional Guidance	Mark
(b)(ii)	<ol style="list-style-type: none"><li>1. same number of chromosomes ;</li><li>2. idea that the mutation affected the sequence of DNA ;</li></ol> <p><b>OR</b></p> <ol style="list-style-type: none"><li>3. idea that (all / most of) the {bands / eq} are the same (size / position / width) ;</li><li>4. idea that only {a small region of DNA / the AHR2 gene} is affected ;</li></ol>	<ol style="list-style-type: none"><li>1. ACCEPT both contain AHR2 gene</li></ol>	(2)

Question Number	Answer	Additional Guidance	Mark
(b)(iii)	<ol style="list-style-type: none"><li>1. a protein with a different {structure / amino acids / function} / eq ;</li><li>2. idea that the mutation will affect the DNA ;</li></ol>	<ol style="list-style-type: none"><li>1. ACCEPT two AAs missing</li><li>2. e.g. two codons missing</li></ol>	(2)

EXAM PAPERS PRACTICE



## EXAM PAPERS PRACTICE

Q10.

Question number	Answer	Additional guidance	Mark
	<p>An answer that makes reference to the following:</p> <ul style="list-style-type: none"><li>• <math>\{C^B / C^P\}</math> is dominant and <math>C^Y</math> is recessive</li><li>• the order of dominance is <math>C^B</math> over <math>C^P</math> over <math>C^Y</math></li></ul>	<p>ALLOW <math>C^B</math> is dominant over <math>C^P</math> / <math>C^P</math> is dominant over <math>C^Y</math> / <math>C^B</math> is dominant over <math>C^Y</math></p> <p>ALLOW brown is dominant to yellow and pink / pink is dominant to yellow</p> <p>ALLOW both marks if correct order of dominance stated</p>	<p>(2)</p>

Q11.

Question Number	Answer	Additional guidance	Mark
(i)	<ul style="list-style-type: none"><li>• (the genotype is) heterozygous and (the phenotype is) affected with the disease (1)</li></ul>	<p>ALLOW any upper case and lower case letter to show heterozygous e.g. Pp</p> <p>IGNORE male/female</p>	<p>Graduate (1)</p>

Question Number	Answer	Additional guidance	Mark
(ii)	<p>The only correct answer is B 0.25</p> <p>A, C and D are not correct.</p>		<p>Computer (1)</p>



EXAM PAPERS PRACTICE

Q12.

Question Number	Acceptable Answer	Additional Guidance	Mark
<b>(a)</b>	A description that makes reference to the following:  <ul style="list-style-type: none"><li>no UV (1)</li><li>water added but not from tank with fish in it that have eaten snails (1)</li></ul>		<b>(2)</b>

Question Number	Acceptable Answer	Additional Guidance	Mark
<b>(b)(i)</b>	An explanation that makes reference to the following:  <ul style="list-style-type: none"><li>calculating increase above control for 'fish' and for 'UV' (1)</li><li>adding effects of 'fish' and 'UV' (1)</li></ul>	fish exposure effect is 12% (above control) and (UV is) 28%	<b>(2)</b>



EXAM PAPERS PRACTICE

Question Number	Acceptable Answer	Additional Guidance	Mark
<b>(b)(ii)</b>	An explanation that makes reference to the following: <ul style="list-style-type: none"><li>• interferes with DNA replication (1)</li><li>• (potentially) leading to mutations (1)</li></ul>		<b>(2)</b>

Q13.

Question Number	Acceptable Answer	Additional guidance	Mark
<b>(a)</b>	<ul style="list-style-type: none"><li>• suitable time interval chosen (in range 0 to 70 s, must be on straight line portion) (1)</li><li>• absorbance change calculated (1)</li><li>• ans. <math>0.053 \text{ au s}^{-1}</math> (or as appropriate for part of graph chosen) (1)</li></ul>	Example: at 0 s abs = 0.4, at 60 s abs = 3.6 (1) so change is $3.6 - 0.4 = 3.2$ (1) over 60 s, make rate $3.2 \div 60 = 0.053 \text{ au s}^{-1}$ (1)	<b>(3)</b>



## EXAM PAPERS PRACTICE

Question Number	Acceptable Answer	Additional guidance	Mark
<b>(b)</b>	<p>An explanation that makes reference to three of the following:</p> <ul style="list-style-type: none"><li>• as enzyme concentration increases the rate of reaction increases and levels off (1)</li><li>• because number of active sites of the enzyme molecules is increasing (1)</li><li>• because enzyme concentration is the limiting factor (1)</li><li>• it levels off because the substrate concentration is limiting (1)</li></ul>		<b>(3)</b>

Q14.



Question Number	Answer	Additional Guidance	Mark
<b>(i)</b>	<ul style="list-style-type: none"><li>• correct values taken from the graph (1)</li><li>• correct answer with correct units (1)</li></ul>	<p><u>Example of calculation</u> <math>0.12 \div 2 =</math> <math>= 0.06 \mu\text{mol dm}^{-3} \text{ min}^{-1}</math> <math>= 0.06 \mu\text{mol per dm}^3 \text{ per minute}</math> or <math>= 0.001 \mu\text{mol dm}^{-3} \text{ s}^{-1}</math> <math>= 0.001 \mu\text{mol per dm}^3 \text{ per second}</math></p> <p>Correct answer with no units gains one mark</p> <p>Correct answer with correct units but no working gains full marks</p>	<b>2</b>





## EXAM PAPERS PRACTICE

Question Number	Answer	Additional Guidance	Mark																								
(ii)	<ul style="list-style-type: none"><li>curve that is less steep but reaches the same plateau (1)</li></ul>	e.g. <table border="1"><caption>Data points for the graph</caption><thead><tr><th>Time / mins</th><th>Fibrinogen converted / <math>\mu\text{mol dm}^{-3}</math></th></tr></thead><tbody><tr><td>0</td><td>0.0</td></tr><tr><td>2</td><td>0.12</td></tr><tr><td>4</td><td>0.18</td></tr><tr><td>6</td><td>0.22</td></tr><tr><td>8</td><td>0.25</td></tr><tr><td>10</td><td>0.27</td></tr><tr><td>15</td><td>0.30</td></tr><tr><td>20</td><td>0.32</td></tr><tr><td>25</td><td>0.33</td></tr><tr><td>30</td><td>0.34</td></tr><tr><td>35</td><td>0.35</td></tr></tbody></table>	Time / mins	Fibrinogen converted / $\mu\text{mol dm}^{-3}$	0	0.0	2	0.12	4	0.18	6	0.22	8	0.25	10	0.27	15	0.30	20	0.32	25	0.33	30	0.34	35	0.35	<b>1</b>
Time / mins	Fibrinogen converted / $\mu\text{mol dm}^{-3}$																										
0	0.0																										
2	0.12																										
4	0.18																										
6	0.22																										
8	0.25																										
10	0.27																										
15	0.30																										
20	0.32																										
25	0.33																										
30	0.34																										
35	0.35																										

Question Number	Answer	Additional Guidance	Mark
(iii)	An explanation that makes reference to the following: <ul style="list-style-type: none"><li>the slower the initial rate of reaction the longer it will take for a clot to form (1)</li><li>because fibrin will be produced more slowly (1)</li></ul>	Allow converse arguments	<b>2</b>

EXAM PAPERS PRACTICE



## EXAM PAPERS PRACTICE

Q15.

Question number	Answer	Additional guidance	Mark
(i)	<ul style="list-style-type: none"><li>conversion of surface area from <math>\text{m}^2</math> to <math>\text{cm}^2</math> (1)</li><li>correctly dividing surface area by volume to determine ratio (1)</li></ul>	<p><u>Example of Calculation:</u></p> <p><math>97 \times 10000 = 970\,000</math></p> <p>divided by lung volume of 6232</p> <p>Correct ratio of <b>155.6 : 1</b> (ALLOW 155.65 :1)</p> <p>ALLOW one mark only for <b>0.0155 : 1 / 0.156 : 1 / 155.6</b></p> <p>Correct answer with no working gains full marks</p>	(2)

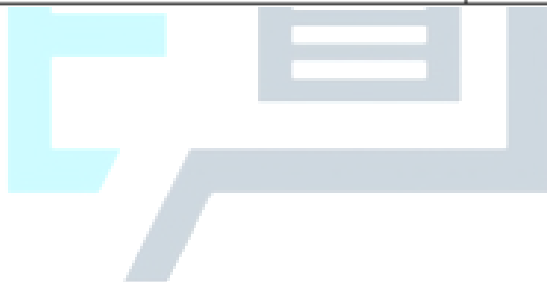
Question number	Answer	Mark
(ii)	<p><b>The only correct answer is D – Student’s t-test</b></p> <p><i>A is not correct because chi- squared does not test difference between means</i></p> <p><i>B is not correct because there is no correlation to test</i></p> <p><i>C is not correct because SD does not compare means</i></p>	(1)



## EXAM PAPERS PRACTICE

Question number	Answer	Additional guidance	Mark
(iii)	An answer that makes reference to two of the following points: <ul style="list-style-type: none"><li>• different { height / weight / mass } (1)</li><li>• different { gender / sex } (1)</li><li>• different age (1)</li></ul>	IGNORE 'size'  ALLOW 'men have larger lungs than women'	(2)

Question number	Answer	Additional guidance	Mark
(iv)	<ul style="list-style-type: none"><li>• to allow (valid) comparison / show differences (1)</li></ul>		(1)



# EXAM PAPERS PRACTICE



EXAM PAPERS PRACTICE

Q16.

Question Number	Answer	Additional Guidance	Mark
	<p>An explanation that makes reference to five of the following:</p> <ul style="list-style-type: none"><li>• as a result of a mutation (1)</li><li>• (cyanobacteria) produce proteins containing the amino acid cysteine (1)</li><li>• (cysteine rich proteins) produce {heat stable enzymes / proteins resistant to unfolding} (1)</li><li>• other adaptations such as {enzymes with large hydrophobic cores / simpler protein folds / amino acids that do not bond to metal ions } (1)</li><li>• high temperatures act as a selection pressure (1)</li><li>• allowing them to {survive / replicate} and pass advantageous allele to next generation (1)</li></ul>	<p>ALLOW 'pass alleles for heat tolerance to next generation'</p>	<p>(5)</p>



Q17.

Question Number	Answer	Additional guidance	Mark
	<p>An explanation that makes reference to three of the following:</p> <ul style="list-style-type: none"><li>• {screen / produce} a (large) population of mice (1)</li><li>• cross (two) heterozygous mice (1)</li><li>• select the homozygous recessive mice (1)</li><li>• and breed from these for subsequent generations (1)</li></ul>	<p>ALLOW labelled genetic diagrams</p> <p>ALLOW carriers for heterozygous</p> <p>ALLOW breed for select</p> <p>ALLOW select mice expressing the recessive trait</p>	<p>(3)</p>



EXAM PAPERS PRACTICE

Q18.

Question Number	Acceptable Answer	Additional Guidance	Mark
	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"><li>• mucus contained in membrane bound vesicles inside the cell (1)</li><li>• (these vesicles) fuse with the cell membrane releasing the mucus (1)</li></ul>		<b>(2)</b>



## EXAM PAPERS PRACTICE

Q19.

Question Number	Answer	Additional Guidance	Mark
	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"><li>• hydrophilic parts associate with water (1)</li><li>• hydrophobic parts {associate with each other / repel water }(1)</li><li>• a bilayer forms with hydrophobic parts pointing { in towards the centre of the bilayer / towards each other } (1)</li></ul>	<p>ALLOW converse</p> <p>ALLOW phosphate groups associate with water</p> <p>ALLOW fatty acids face away from water</p> <p>ALLOW annotated diagram to show arrangement of phospholipids</p>	<b>3</b>

Q20.

Question Number	Answer	Additional Guidance	Mark
<b>(i)</b>	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"><li>• changing a base results in a change in the triplet code</li><li>• this changes the codon(s) in the mRNA</li><li>• resulting in a different { amino acid / amino acid sequence } (in the primary structure)</li></ul>	<p>ALLOW deletion / substitution / insertion / frameshift.</p> <p>ALLOW illustration of change in triplet code e.g. ATT to ATG</p> <p>ALLOW introducing a stop codon / terminating translation</p>	<b>(3)</b>



## EXAM PAPERS PRACTICE

Question Number	Answer	Additional Guidance	Mark
(ii)	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"><li>• sequence the genome of people with MPS1</li><li>• sequence the genome of a number of people without the condition</li><li>• compare the base sequences to identify mutations found only in individuals with the condition</li></ul>	ALLOW comparison of base sequences of people with MPS1 and people without MPS1	(3)

Q21.

Question Number	Answer	Additional guidance	Mark
	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"><li>• (a recessive disorder is one) caused by a faulty allele (1)</li><li>• that is only expressed in the { homozygous condition / absence of a normal allele } (1)</li></ul>	<p>ALLOW faulty gene</p> <p>ALLOW only expressed if genotype is { homozygous recessive / bb } or if two recessive alleles are inherited</p>	(2)





EXAM PAPERS PRACTICE

Q22.

Question Number	Answer	Additional Guidance	Mark
	<p>An explanation that makes reference to two of the following:</p> <ul style="list-style-type: none"><li>• use a range of concentrations between 0 and 2.0 (<math>\text{ng cm}^{-3}</math>)</li><li>• so that enzyme concentration is the only limiting factor</li><li>• because the initial rates of reaction have to be compared</li></ul>		(2)

Q23.

Question Number	Answer	Additional guidance	Mark
(i)	<p>An explanation that makes reference the following:</p> <ul style="list-style-type: none"><li>• hydrolysis of ATP (1)</li><li>• provides energy for the reaction (1)</li><li>• provides phosphate group for phosphorylation of F-6-P (1)</li></ul>	<p>ALLOW as the reaction requires energy</p> <p>ALLOW provides {phosphate / Pi} that is added to F-6-P</p>	(3)



## EXAM PAPERS PRACTICE

Question Number	Answer	Additional guidance	Mark
(ii)	<p>An answer that makes reference to three of the following:</p> <ul style="list-style-type: none"><li>• as concentration of { F-6-P / F-2,6-BP } increases so does the (initial) rate of reaction of the phosphofructokinase (1)</li><li>• an increasing in the concentration of { F-6-P / F-2,6BP } will increase the rate of glycolysis (1)</li><li>• up to a maximum (rate) (1)</li><li>• increasing the concentration of F-2,6-BP reduces the concentration of F-6-P required to achieve the maximum rate of glycolysis (1)</li></ul>	<p>ALLOW 'enzyme' for 'phosphofructokinase'</p> <p>ALLOW F-2,6-BP provides positive feedback to the enzyme activity</p>	(3)

# EXAM PAPERS PRACTICE



## EXAM PAPERS PRACTICE

Q24.

Question number	Answer	Additional guidance	Mark
	<p>An explanation that makes reference to three of the following:</p> <ul style="list-style-type: none"><li>• { thick / sticky / viscous } mucus (1)</li><li>• (accumulation of mucus) which cannot be moved by cilia (1)</li><li>• restricting air flow through { bronchioles / bronchi } (1)</li><li>• { increases diffusion distance / reduces surface area for gas exchange } in the alveoli (1)</li></ul>	<p>IGNORE 'airways' ALLOW narrowing of bronchioles</p>	<p>(3)</p>

Q25.

Question number	Answer	Additional guidance	Mark
	<p>An explanation that makes reference to three of the following points:</p> <ul style="list-style-type: none"><li>• { smaller surface area / increased diffusion distance } for gas exchange (1)</li><li>• therefore reduction in oxygen uptake (1)</li><li>• therefore less oxygen for aerobic respiration (1)</li><li>• leading to more anaerobic respiration (causing fatigue) (1)</li></ul>	<p>ALLOW smaller SA:vol</p>	<p>(3)</p>