

# Answers to Practice Exams

## Practice Exam A

### Section 1

Question	Response	Mark	Top Tips
1.	B	1	You must be able to identify cell structures from diagrams and know their functions.
2.	C	1	Find the number of cells and then divide it by the total number of cells – multiply the answer by 100. $(15/50) \times 100 = 30\%$
3.	B	1	Tricky – you need to go through each option – it will take a bit of time and making some sketches might help. You can draw on the question paper!
4.	A	1	You need to know the three features of active transport – against concentration gradient, involves proteins, needs energy/ATP.
5.	D	1	Language is crucial – you need to know the terms chromatid and spindle fibre, and their roles in mitosis.
6.	B	1	DNA looks like a twisted ladder – the rungs are the bases that carry the genetic code.
7.	D	1	Bacterial chromosomes are usually long and coiled up, but plasmids look neat and circular.
8.	D	1	You need to learn the levels of organisation in biology – cell, tissue, organ, system, organism.
9.	C	1	Watch for the <b>bold</b> in the question – tick off the true options as you work through.
10.	A	1	This is a standard type of brain diagram – you must be able to identify where particular functions occur.
11.	C	1	The key here is reading the question – the word <b>respond</b> is crucial – candidates could be wrongly attracted by pancreas, which <b>produces</b> insulin.
12.	B	1	You need to appreciate that only gametes are the only haploid cells mentioned in National 5 Biology.
13.	C	1	Just like maths – $A = B \times C$ so B must be A divided by C. Calculator almost essential! Remember, 4 litres = 4000 cm <sup>3</sup>
14.	B	1	You just need to learn these words – why not make yourself a set of flash cards? Put the word on one side and the meaning on the other.

Question	Response	Mark	Top Tips
15.	D	1	The <b>bold</b> is vital, and again it is the term <b>community</b> that needs to be learned.
16.	D	1	The word <b>biotic</b> sounds like <b>biology</b> for a good reason – you are looking for <b>living</b> factors.
17.	C	1	A bit tricky but if 90% is lost, 10% is kept. Writing the figures under the organisms' names in the chain will help keep you right.
18.	A	1	Tricky – take each option in turn. B and C are clearly wrong but D looks attractive. Remember that plants need nitrates and make their own amino acids and proteins.
19.	A	1	It is vital to remember that the 0 value counts – so the total number of limpets is divided by the 9 quadrats.
20.	A	1	It is worth trying to sort out the difference between validity and reliability – it's tough because they do overlap a bit.

## Practice Exam A

### Section 2

Question	Expected response	Mark	Top Tips	
1.	(a)	X lipid = 1 Y protein = 1	2	You need to learn the appearance of the two molecules in diagrams.
	(b)	selectively down does not require <b>All 3 = 2, 2 or 1 = 1</b>	2	Remember that the concentration gradient is a bit like a physical slope – so up, down – with and against are good terms!
	(c) (i)	place in a solution of lower water concentration than cell sap	1	Position of the cell membrane is vital in identification of cell condition.
	(c) (ii)	plasmolysed	1	Remember <b>PS</b> – <b>Plasmolysed in Strong</b> solution.
2.	(a)	P R Q	1	The words <b>building up</b> in the stem of the question are crucial to answering. <b>Synthesis</b> starts with <b>small</b> molecules.

Question		Expected response	Mark	Top Tips
	(b)	active site	1	The shape of the active site allows reaction with specific substrate molecules.
	(c)	active site shape altered/ denatured = 1 cannot bind to substrate = 1	2	Temperature is critical in biology – proteins don't like heat!
3.	(a)	A = hydrogen B = ATP C = oxygen <b>All 3 = 2, 2 or 1 = 1</b>	2	This is a useful diagram – you could copy it and put in the missing information for your revision notes.
	(b) (i)	no starch present = 1 CO <sub>2</sub> needed for photosynthesis = 1	2	Starch storage is a sign that photosynthesis has happened, and excess product has been produced.
	(b) (ii)	set up as leaf A but without substance to absorb CO <sub>2</sub>	1	Controls allow comparison with results and show if an experimental variable is causing a result.
	(b) (iii)	repeat experiment but remove glass tubes, cover one leaf to exclude light	1	This is a common question type – there are three parts to the standard answer. Repeat, hold original variable constant, alter new variable.
4.	(a)	scales and labels = 1 points and connection = 1	2	Include zeros and highest values on even scales. Include units with labels. Plot with a sharp pencil. Connect plots with straight lines.
	(b)	carbon dioxide	1	Remember CO <sub>2</sub> is produced in fermentation as well as in aerobic respiration.
	(c)	measure volume of gas rather than counting bubbles	1	<b>Accurate</b> is the key word – this usually relates to the measurement method.
	(d)	rate would decrease = 1 enzymes work slowly in cool conditions = 1	2	You must realise that fermentation is enzyme controlled.

Question		Expected response	Mark	Top Tips
5.	(a)	sensory neuron	1	There are three types of neuron to be known – sensory, relay and motor.
	(b)	synapse = 1 allow transfer of electrical impulses to the next neuron = 1	2	Electrical impulses can only cross when the synapses are filled with chemical transmitter.
	(c)	protection from excess heat = 1 improved survival chances = 1	2	The word <i>protection</i> is vital here, and the diagram in the question gives the clue to the type of damage avoided.
6.	(a)	J Rr K Rr L rr <b>All 3 = 2, 2 or 1 = 1</b>	2	It is worth adding the known alleles onto the diagram on the paper to make answering easier.
	(b)	N has allele R because he is a roller = 1 other allele could be either R or r = 1	2	Doubt about offspring is because at least one parent is heterozygous.
7.	(a)	W xylem, water/minerals X phloem, sugar <b>All 4 = 3, 3 or 2 = 2, 1 = 1</b>	3	Just learn it but you could try the F sounds – <i>phloem for food</i> .
	(b)	lignin	1	<b>XL</b> – Xylem has Lignin.
8.	(a)	keep airway open	1	Just like hoses on vacuum cleaners – airways need support.
	(b)	<ul style="list-style-type: none"> <li>• mucus is sticky</li> <li>• traps inhaled particles/pathogens</li> <li>• cilia drive mucus upwards</li> <li>• into mouth to be swallowed</li> </ul> <b>Any 3 = 3, any 2 = 2, any 1 = 1</b>	3	The sticky conveyor belt idea will help here.
	(c)	(i) age number of cigarettes smoked daily <b>both</b>	1	Look carefully for the factors that vary in the data.
	(c)	(ii) 100%	1	Use a clear plastic ruler to help with the graph reading and remember that doubling a number is a 100% increase.

Question		Expected response	Mark	Top Tips
9.	(a)	species Q correctly adapted beak and habitat preference <b>both</b>	1	Spotting the link here is crucial – the table describes beak shape, and the diagrams show beak shape.
	(b)	different food = 1 different habitat = 1	2	Interspecific competition occurs when the <b>same</b> resources in the <b>same</b> habitat are required by <b>two</b> species – competition is reduced when requirements are different.
	(c)	R P Q	1	What about trying <b>I'M a New Species</b> . Isolation – <b>Mutation</b> – <b>Natural Selection</b> ?
10.	(a)	quadrats drop randomly	1	The only plant-sampling technique in National 5 assessment is quadrats.
	(b)	3:1	1	Ensure that your ratio has only whole numbers.
	(c)	20 000	1	This is where the need to know the number of m <sup>2</sup> in a hectare given in the question comes in.
	(d)	light intensity = 1 shade of trees in woodland reduces photosynthesis at ground level = 1	2	You need to visualise a wood compared with an open grassy area – light and shade should come to mind! There could be other answers too though.
11.	(a)	B C A <b>All 3 = 2, 2 or 1 = 1</b>	2	Why not copy the table and add in what each bacteria group does for your revision notes?
	(b)	protein/polypeptide/amino acid/ nucleic acid	1	Plants take up nitrates, use them to make amino acids, then synthesise these into proteins.
	(c)	decomposers	1	Not all decomposers are bacteria – fungi and some other organisms can also be involved.

Question		Expected response	Mark	Top Tips
12.	(a)	adds (aerobic) bacteria to water/ has nutrients which allow = 1 9 (aerobic) 0 bacteria to multiply = 1 (aerobic) bacteria use up oxygen = 1	3	The relationship between sewage and dissolved oxygen in water needs to be learned – it's a bit tricky, and the role of bacteria is crucial.
	(b)	increase in nitrate levels	1	Use a clear plastic ruler to add a line up from Q and R to make the question clearer.
	(c)	algae undergo photosynthesis, which produces oxygen	1	Using knowledge from other key areas is often required. Here it is about photosynthesis.
	(d)	all factors return to levels before addition of sewage	1	Compare the start of the graph to the end.