

Practice Exam B

Section 1

Question	Response	Mark	Top Tips
1.	D	1	Here again you must be able to recognise cell structures from diagrams and have learned their functions.
2.	D	1	Count the cell lengths up the field of view and divide the number into 1000 micrometres.
3.	C	1	Candidates sometimes confuse specific and optimum – make sure you know the difference.
4.	B	1	The extraction order does not matter but the insertion order does!
5.	D	1	Crucial here to notice that increasing distance decreases light intensity.
6.	A	1	Think about energy forms. Light energy trapped by chlorophyll and chemical energy trapped into ATP.
7.	A	1	Important to see that X (pyruvate) is a junction for both pathways.
8.	B	1	Decrease in respiration rate can result from a reduction in respiratory substrate as in option B – tricky though.
9.	B	1	Be careful with the bolds here.
10.	C	1	Evidence of dominance often comes from looking at phenotypes in the F_1 – the word all in option C is a big clue.
11.	C	1	Rough working will be needed here.
12.	B	1	Be aware that flowers take many different forms but the structures are usually in the same positions relative to each other.
13.	C	1	PS – Phloem carries Sugar
14.	A	1	The single un-branched vessel is the lacteal, which leads into the lymph vessels.
15.	D	1	Again, biotic and biology are related – you are looking for living factors under biotic and on living ones under abiotic.

Question	Response	Mark	Top Tips
16.	C	1	Make sure you understand how the pyramid shape relates to biomass at the different levels.
17.	A	1	Very tricky – might be useful to mark trends onto the table in the question paper.
18.	A	1	Remember – I'M a New Species – Isolation Mutation Natural Selection.
19.	B	1	A two-step calculation – first find the increase, then divide it by the original value and multiply the answer by 100.
20.	D	1	Tricky – there are two variables affecting the result because the disease requires overcrowded conditions to flourish.

Practice Exam B

Section 2

Question	Expected response	Mark	Top Tips	
1.	(a)	show smaller vacuole = 1 show cytoplasm/cell membrane pulled from wall = 1	2	Draw carefully using the shading in cell A as a key for your drawing – sharp pencil needed.
	(b)	turgid	1	Identifying the membrane is vital in seeing what's going on.
	(c)	(i) osmosis	1	What's moving? If it's water, it's by osmosis!
	(c)	(ii) does not require (additional) energy	1	Passive is the opposite of active – no additional energy required.
	(d)	tissue similar	1	Cell, tissue, organ, system, organism – levels of organisation again.
2.	(a)	chromatids pulled apart/move toward poles	1	Terms are vital – you will need chromatid and poles...
	(b)	spindle fibre	1	... and now you need spindle fibres.

Question		Expected response	Mark	Top Tips
	(c)	identical diploid unspecialised All 3 = 2, 2 or 1 = 1	2	These cells have divided by mitosis so they must be genetically identical and diploid. They can go on to become any of the mature cells of the plant so, at this stage, they must be unspecialised.
3.	(a)	DNA	1	DNA carries the genetic code.
	(b)	1 T/thymine = 1 2 C/cytosine = 1	2	Bases are in complementary pairs – you just need to learn them!
	(c)	ribosomes	1	RNA goes to Ribosomes.
	(d)	the order/sequence of bases	1	The bases are like an alphabet, so their order gives the code its sense.
	(e)	enzyme, hormone, antibody, structural, receptor any	1	There are about five different possibilities – learn them!
4.	(a)	scales and labels = 1 plots 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)	5:4	1	Make sure you have whole numbers that do not have a common factor.
	(c)	alcohol is toxic to the yeast cells OR glucose all used up	1	Standard answer to this question.
	(d)	use a finer scale to measure CO ₂ volumes OR use a CO ₂ probe and data-logger	1	Again, accuracy is related to measurements.
	(e)	repeat but vary the chosen factor and keep all other factors the same	1	Three steps as usual. Repeat, original factor held constant, chosen factor varying.

Question		Expected response	Mark	Top Tips
5.	(a)	electrical impulses	1	Nervous messages are electrical impulses.
	(b)	release of chemical into gap/synapse		The electrical impulse can be carried through the gap by chemicals.
	(c)	synapse	1	The gaps prevent continuous transmission of nerve impulse – you just have to learn the name.
	(d)	automatic/rapid = 1 protective = 1	2	The rate of response prevents a harmful stimulus from causing damage.
6.	(a)	1.4 cm	1	Subtract the largest from the smallest.
	(b)	there is a range of lengths involved	1	Remember – continuous variation shows a range of values that merge with each other – the values are not clear-cut.
	(c)	correct matching example, e.g. human tongue-rolling; rose-petal colour	1	Useful to have a few examples up your sleeve – human ones are often easiest to remember.
7.	(a)	(i) P on left upper vessel on diagram	1	You must learn the pattern – the left atrium position is the reference clue.
	(a)	(ii) downward arrow	1	Remember the left side is on the right of the diagram! Think about your reflection in a mirror.
	(b)	valves	1	Any type of valve permits one-way flow only.
	(c)	thick wall in arteries, thinner in veins OR carry blood away from heart, towards in veins OR carry blood under high pressure, lower in veins OR veins contain valves, arteries do not	1	There are several differences – you just need to learn them!

Question		Expected response	Mark	Top Tips
	(d) (i)	haemoglobin present which binds to oxygen = 1	2	A very specialised protein that can bind but also release oxygen.
	(d) (ii)	dimples present which give large surface area = 1		Area is crucial in any absorbing or secreting surface.
8.	(a)	7 until 18 hours	1	Draw a line across the graph from 100 cm ³ per hour per plant then read down from the intersects to the times on the scale.
	(b)	1 temperature = 1 2 light intensity = 1	2	Looking for environmental factors that vary through a day – these are really the only options. Wind could be involved but it is not a predictable feature of a day.
	(c)	stoma/stomata	1	Remember the pore is the stoma that is formed between the guard cells.
	(d)	carries water to leaves for photosynthesis OR cools plant OR provides support for cells	1	The standard benefits of transpiration!
9.	(a)	quadrats = 1 drop randomly and count/record numbers of plants inside = 1	2	Quadrats are the only sampling method for plants mentioned in National 5 assessment. Very simple to use.
	(b)	205	1	Go to the path chart and species 1 – every small box is five plants so 205!
	(c)	species O – decreases in number species P – increases in number both	1	Bits of different highlighter colour on the species columns of each graph might help.
	(d)	species Q	1	A bit tricky but species Q stands out as unchanged – in some questions you might have to read the bars carefully.

Question		Expected response	Mark	Top Tips
10.	(a)	<p>match the name and role</p> <p>X nitrogen-fixing bacteria = 1 role – convert nitrogen gas into nitrate (in plant) = 1</p> <p>Y nitrifying bacteria = 1 role – convert ammonia to nitrate in soil = 1</p> <p>Z denitrifying bacteria = 1 role – convert nitrate to nitrogen gas = 1</p>	2	There is a choice – probably better to think about each letter in turn and be sure you choose the one you are most confident about.
	(b)	protein, polypeptide, amino acid, nucleic acid	1	Plants take up nitrate, convert it to amino acids, which they use in protein synthesis.
	(c)	fertilisers	1	Fertilisers usually provide NPK – nitrogen, phosphorus and potassium.
11.	(a)	false true true All 3 = 2, 2/1 = 1	2	Remember ROALF – R andom O ccurrence A nd L ow F requency. A bit more work needed here though, producing a tricky question.
	(b)	<ul style="list-style-type: none"> • organisms vary • best adapted varieties have a selective advantage • these varieties survive better • they pass on their genes to their offspring All 4 = 3, 3 = 2, 2 = 1	3	Natural selection acts on variation – this is the basis of evolution.
12.	(a)	the further away from the source of pollution, the more lichen cover	1	What do the data show? Is there a trend? Does the trend relate to the statement?
	(b)	8 km	1	Find the high point of the data and read down to the scale.
	(c)	reduce photosynthesis = 1 blockage of light OR clogged stomata = 1	2	Tricky – think about sooty dust and leaves – how could dust affect photosynthesis?