Common and Silly Mistakes

1. Putting a right answer and then missing out on the mark because you then put a wrong answer!

F211 - June 2011

1 (a) Fig. 1.1, **on the insert**, shows an electron micrograph of cells from the liver.

(i) Some cells, such as liver cells, contain a lot of Golgi apparatus.

State **one** function of the Golgi apparatus.

Packages and stores proteins

0 marks

Correct

Incorrect so cancels out mark

[1]

Question			Expected Answer	Mark	Additional Guidance
1	(a)	(i)	production of vesicles / packaging proteins ;		**Mark the first answer.** If the first answer is correct and an additional answer is given that is incorrect or contradicts the correct answer then = **0 marks** **ACCEPT** lipids **IGNORE** ref to transport / secretion / exocytosis / substances / materials **DO NOT CREDIT** stores proteins
			modification of / processing of / adding carbohydrate to , proteins ;		**ACCEPT** makes glycoproteins
			production of lysosomes ;	**max 1**	

2. Missing out key words/using the incorrect key words:

2 (b) (ii) State **two** examples of active transport in cells.

For each example, you should name the substance that is transported **and** the cell involved.

0 marks

Potassium into the root hair

Water by osmosis

Missing word: ions

Wrong – Water moves passively

Question			Expected Answer	Mark	Additional Guidance
2	(b)	(ii)	(mineral) ions / salts / named e.g. (into) root hair (cell) ; hydrogen ions (out of) companion cells ; (mineral) ions / salts / named e.g. (across) endodermis ; sucrose out of sieve tube at sink ; AVP ; ;	max 2	**Mark the first two examples.** **Ensure candidate refers to ions e.g. nitrates, phosphates, calcium ions, magnesium ions etc.** ACCEPT correct symbols with charge **DO NOT CREDIT** ref to water **ACCEPT** ref to loading of sucrose into , phloem cell / companion cell **ACCEPT** ref to uptake of glucose by cells lining , (small) intestine / nephron / PCT **IGNORE** references to endocytosis / exocytosis / phagocytosis / secretion **DO NOT CREDIT** incorrect direction of movement if stated e.g.

substance	cell	(direction)
sodium/potassium ion(s)	neurone	K^+ in Na^+ out
sodium/potassium ion(s)	named cell	Ion pump to drive cotransport
potassium ion(s)	guard cell (to open stomata)	in
sodium ion(s)	cell of loop of Henle	out
calcium ion(s)	muscle cell	(into sarcoplasmic reticulum)
calcium ions	presynaptic knob	out
hydrogen ions	in cell , respiring (aerobically) / photosynthesising	for chemiosmosis
named ion(s)	cells lining distal convoluted tubule	in / out

- When discussing enzymes remember they have a specific ACTIVE SITE. Do noty just say they have a specific SHAPE.
- In cell signalling receptors and signalling molecules have COMPLIMENTARY shapes – not matching/same shapes.

4 (a) (ii) Suggest why the influenza vaccine has to be changed each year.

The influenza mutates each year so that there are different strands of the virus. It will be immune and produces antibodies against the vaccine so that a new vaccine would be needed.

virus

strains

0 marks

resistant

[2]

4	(a)	(ii)	different strains of the virus / virus mutates (each	IGNORE 'different types' or 'virus changes' or 'different strands'
			(new strains have) different antigens ; *idea that* antibody produced , needs to match new antigen ; **ora**	ACCEPT (influenza) pathogen REDIT antigenic shift / drift original antibody does not match new antigen **2 max**

3 (a) (ii) State **why** the English Elm clone is genetically isolated from other varieties of elm.

They are all genetically identical because it reproduces asexually by suckers.

Missing word: only

... **[1]**

3	(a)	(ii)	rarely / do not , produce seed / cross-pollinate / interbreed ; only reproduce asexually ;	1 max	

3. Mistakes with simple calculations – show your working and double check all calculations!

stage of cell cycle	percentage cells in stage (%)
interphase	82.00
prophase	4.34
metaphase	3.23
anaphase	3.23
telophase	7.20

This question relies on your understanding that nuclear division is prophase, metaphase, anaphase and telophase are ALL part of nuclear division (mitosis) so you need to add up the % figures.

4 **(c)** Using the results shown in Table 4.1, calculate the percentage of the cell cycle taken up by nuclear division.

Show your working.

4.34 + 3.23 + 3.23 + 72.0 = 18 ÷ 80

This part not needed

1 mark

Answer = ... *22.5* ..... % **[2]**

Question			Expected Answer	Mark	Additional Guidance
4	(c)		***Two*** *marks for correct answer, even if no working shown* 18.00 ; ;	2	**CREDIT** 18 / 18.0 If answer is incorrect or missing allow one mark for working 100 – 82 **or** 4.34.+ 3.23 + 3.23 + 7.20 **or** 18 somewhere in working

4. Repeating the question in your answer

6 (b) The sap in the phloem sieve tubes is moved by mass flow.

State **two** adaptations of sieve tubes that enable mass flow to occur.

Phloem is made up of sieve tubes which are associated with companion cells.

This means that there are no organelles in the sieve tube to allow the sap to flow through without any problem.

..... **[2]**

Phloem is made up of sieve tubes – **given in question** – no mark.

The question doesn't ask about companion cells – you don't need to write about them.

0 marks

There are FEW organelles/little cytoplasm but "NO organelles" is incorrect.

More detail is needed in this answer – the student hasn't mentioned sieve plates or elements joined end to end.

6	(b)		1 elongated elements ;			
			2 elements , joined end to end / form colu			
			3 sieve plates / pores in end walls / perforated end plates			
			4 little cytoplasm / cytoplasm pushed to c thin (laye			
			5 no nucleus / few organelles ;	max 2	5	IGNORE no organelles / few cell contents

5. Not enough detail – the number of marks should be the number of separate points.

2 **(a)** Enzymes are biological catalysts.

Explain the term biological catalyst.

It's an enzyme that speeds up chemical reactions

.....

.....

.....

.....

1 mark

More detail needed – what is an enzyme?

Question			Expected Answers		
2	(a)		(enzymes are) proteins / used in metaboli… named metabolic pathway ;		…e body' **IGNORE** 'biological / enzyme / in nature'
			alter rate of (chemical) reaction / lowers activation energy / provides alternative route for reaction / is not changed / is not used up ;	2	**ACCEPT** does not take part in reaction **Note** 'speed up metabolic reactions' **= 2 marks**

4 **(b)** Tamiflu® is an antiviral drug that can be used to treat influenza patients.

(i) State why a doctor would **not** prescribe antibiotics to treat influenza.

Because flu is a caused by a virus.

.....

.....

Must say what antibiotics DO

Question			Expected Answers	Mark	Additional Guidance
4	(b)	(i)	(antibiotics) are, not effective against viruses / effective (only) against bacteria (and fungi / protozoa) ;	1	**ACCEPT** antibiotics do not kill viruses **IGNORE** viruses are resistant to antibiotics **ACCEPT** correct ref to detail of antibiotic action, e.g. 'antibiotics attack cell wall which is not present in influenza (virus)'

6. Use the term MEAN rather than AVERAGE.

2 (b) (iii) The student collected the data shown in Table 2.1.

For each example, you should name the substance that is transported **and** the cell

temperature (°C)	volume of oxygen (cm³)
5	4
10	7
12	10
25	28
28	32

Suggest how the student could check the reliability of the data.

He could take repeats to calculate an average value. He could also check his results with other people's.

..... **[2]**

Question			Expected Answers	Mark	Additional Guidance
2	(b)	(iii)	repeat / replicate ; compare replicate values / identify anomalous results ; mean / range / standard deviation / error bars / % error ; compare results with , others' / book / internet , values / results ;	2 max	e.g compare replicates with Table 2.1 **IGNORE** average Must contain the idea of other investigators **ACCEPT** 'look up normal values on the internet'

7. When asked to compare, you must make sure you make comparative statements:

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2 (a) The nervous system is made up of a number of different types of neurone, which transmit electrical impulses.

Complete the table below by stating **three** differences in the structure of motor and sensory neurones.

motor neurone	sensory neurone
Carries messages from the CNS	*Carries messages from the CNS*
Has a dendron and the cell body sticks out from the rest of the cell at the centre	*Cell body is at the end of the cell*
Has a short axon	*Doesn't have a dendron*

[3]

At AS , one box in the row may be filled in. With A2, the table is likely to be blank.

Not messages - IMPULSES

This is not a comparative statement as the 2 boxes discuss different parts of the structure

Question			Expected Answer	Mark	Additional Guidance
1	(a)				**Award 1 mark for each correct side by side comparison.** Comparative statements **must** be made on the same row. **ALLOW two valid comparisons in the same pair of boxes, e.g** Cell body at end of neurone in the CNS | Cell body in middle and in the PNS **= 2 marks** mps 2, 3 and 4 can be taken from a labelled diagram All mps can be taken from annotated diagrams

	motor neurone	*sensory neurone*	
1	cell body in CNS	cell body , not in CNS / in PNS	;
2	cell body at end (of neurone)	cell body , not at end / in middle (of neurone)	;
3	dendrites connect directly to cell body	dendrites do not connect directly to cell body **or** dendrites at the end(s) of , dendron / axon	;
4	long(er) axon	short(er) axon	;
5	dendron absent / no dendron	dendron present	;
6	ends at motor end plate	starts at / connects to , (sensory) receptor	;

3

8. Giving up because you don't recognise the words in the question:

3 Fatigue is a symptom of some medical conditions. One feature of fatigue is extreme tiredness, due to a lack of energy.

Medical conditions that have fatigue as a characteristic symptom include Type 2 diabetes, certain heart conditions, chronic fatigue syndrome (CFS) and emphysema.

(a) Explain how emphysema could result in fatigue.

It means that there's less oxygen getting in and getting to the cells so there is less energy as there is no respiration.

[2]

There is LESS respiration not NO respiration

I've never heard of emphysema. What is it? It's not on the syllabus.

[2]

Yes it is – in F212. At A2 20% of the marks are synoptic. This question simply asks you to apply your knowledge!

Question	Expected Answer	Mark	Additional Guidance
3 (a)			**IGNORE** 'produces' energy in any mark point
	1 less ventilation / *Idea of* difficulty in exhaling due to less recoil / small surface area for gaseous exchange / less oxygen entering capillaries / less oxygen entering blood ;		1 **DO NOT CREDIT** no oxygen
	2 less oxygen (reaching cells) for , (aerobic) respiration / oxidative phosphorylation ;		2 **DO NOT CREDIT** no respiration
	3 (so) less ATP produced ;		3 **DO NOT CREDIT** no ATP
	4 *idea of* increased acidity (as CO_2 / lactate builds up) interfering with / affects , enzymes / respiratory metabolism ;	2 max	

9. Don't use negative statements:

2 Animals behave in ways that enhance their survival and reproductive capacity. This behaviour may be innate or learned.

(a) Describe what is meant by:

(i) innate behaviour

It's instinctive. You're born with it. You don't have to think about it.

..... **[2]**

(ii) learned behaviour

Learned behaviour isn't instinctive.

This is a negative statement.

Question			Expected Answers	Marks	Additional Guidance
2	(a)	(i)	1 instinctive ; 2 genetic / genetically determined / inherited ; 3 rigid / fixed pattern / inflexible ; 4 stereotyped / stereotypical ; 5 automatic / does not require thought / does not require learning ;	2 max	2 **IGNORE** born with it / present from birth 3 **ACCEPT** description. Same in all members of species or performed the same all the time
2	(a)	(ii)	1 (behaviour) changed / altered / learnt , by experience ; 2 ref. memory / association / reinforcement / practice ; 3 variable ;	2 max	1 **ACCEPT** taught by parents / learnt by watching others 'due to experience' is not enough. They need to refer to ***past*** experience. 3 **ACCEPT** description. Varies or is different in different members of a species or in one animal at different times