

Mark Scheme

Combined Science GCSE

Cells and Control Test

(Levels 4-9)

	Answer	Marks												
1. (a)	B is prophase, C is metaphase.	(1)												
1. (b)	• Cytokinesis • Cytoplasm Divides Into Two (Daughter) Cells	(2)												
1. (c)	asexual reproduction.	(1)												
1. (d)	2 correct answers for 1 mark All correct answers for 2 marks <table border="1"> <thead> <tr> <th></th><th>Mitosis</th><th>Meiosis</th></tr> </thead> <tbody> <tr> <td>Produces body cells</td><td>✓</td><td>✗</td></tr> <tr> <td>Produces four daughter cells</td><td>✗</td><td>✓</td></tr> <tr> <td>Daughter cells are varied</td><td>✗</td><td>✓</td></tr> </tbody> </table>		Mitosis	Meiosis	Produces body cells	✓	✗	Produces four daughter cells	✗	✓	Daughter cells are varied	✗	✓	(2)
	Mitosis	Meiosis												
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Produces four daughter cells	✗	✓												
Daughter cells are varied	✗	✓												

(Total for Question 1 = 6 marks)

	Answer	Marks
2. (a)	cancer	(1)
2. (b)	• increasing • differentiate Answers must be given in that order.	(2)
2. (c)	2 marks per pair of comparative statements. Max 2 marks if comparisons are not made. • Plants grow continuously. • Animals grow to a max size (typically). • Plants grow by cell enlargement/elongation. • Animals grow by increasing cell number/cell division. • Cell division in plants occurs at meristems. • Cell division in animals occurs in all tissues. • Many plant cells can differentiate. • Most adult animal cells cannot differentiate.	(4)

(Total for Question 2 = 7 marks)

	Answer	Marks
3. (a)	91st	(1)
3. (b)	45cm	(1)
3. (c)	1 mark for correct conversion of units 1 marks for correct application of equation $= 12.5 \text{ kg} \times 0.6724$ $= 18.59$	(2)
3. (d)	• Children are still growing/developing. • Children grow at different rates. • Other factors not considered, e.g. Gender.	(2)

(Total for Question 3 = 6 marks)

	Answer	Marks
4. (a)	An undifferentiated cell, which can become specialised.	(1)
4. (b)	• Making new cells to treat people with diseases. • Named example of cell type and disease, e.g. brain cells to treat Parkinson's. • Rebuilding bone/cartilage. • Repair damaged immune systems. • Replacing heart valves.	(3)
4. (c)	Students should include a balanced argument of statements for and against the use of embryonic stem cells. Max 4 marks if the argument is unbalanced. Suggested content • Human embryos may be destroyed. • Could be considered murder by some people. • It is an unnatural process. • Destroying human life is immoral/wrong. • Stem cells can be collected/removed from unused embryos. • Embryos may be left over from fertility treatment/discarded anyway. • A few embryos may be destroyed but will help many people to be treated for incurable diseases.	(6)

(Total for Question 4 = 10 marks)

	Answer	Marks
5. (a)	roots and leaves	(1)
5. (b)	• length • width • height • leaves • flowers The first three answers must be given in that order; the final two can be reversed.	(5)

(Total for Question 5 = 6 marks)

	Answer	Marks										
6. (a)	neurone/nerve cell	(1)										
6. (b)	X is an axon, Y is myelin sheath.	(1)										
6. (c)	<table><tr><th>Part of Nervous System</th><th>Function</th></tr><tr><td>Receptor</td><td>Receives stimulus from the environment</td></tr><tr><td>Sensory Neurone</td><td>Carries the message towards the central nervous system</td></tr><tr><td>Relay Neurone</td><td>Passes information through the central nervous system</td></tr><tr><td>Motor Neurone</td><td>Carries the message away from the central nervous system</td></tr></table>	Part of Nervous System	Function	Receptor	Receives stimulus from the environment	Sensory Neurone	Carries the message towards the central nervous system	Relay Neurone	Passes information through the central nervous system	Motor Neurone	Carries the message away from the central nervous system	(4)
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6. (d)	• Acts as an insulator. • Messages can be transmitted along the length of the axon/axons are very long.	(2)										

(Total for Question 6 = 8 marks)

	Answer	Marks
7. (a)	Fast and unconscious response to a stimulus.	(1)
7. (b)	• Receptors detect stimulus. • Sensory neurones transmits a message towards the central nervous system accept CNS)/brain/spinal cord. • Motor neurones transmits a message away from the central nervous system accept CNS)/brain/spinal cord. • Effectors produce a response.	(4)
7. (c)	synapse	(1)
7. (d)	Via a neurotransmitter/chemical (messenger)	(1)

(Total for Question 7 = 7 marks)

TOTAL FOR PAPER = 50 MARKS