

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	process by which cells divide to produce two identical cells		1	AO1 4.1.2.2
01.2	C B A D	1 mark for one correct 2 marks for two correct 3 marks for all correct	3	AO2 4.1.2.2
01.3	Any two from: <ul style="list-style-type: none"> Cell membrane divides Cytoplasm divides Cell divides to form two cells 		2	AO2 4.1.2.2
02.1	undifferentiated differentiation		1 1	AO1 4.1.2.3
02.2	They could replace faulty cells / (differentiate into cells that could) produce insulin.		1	AO3 4.1.2.3
02.3	Adult stem cells: <ul style="list-style-type: none"> found in bone marrow can produce a few cell types in the body Embryonic stem cells: <ul style="list-style-type: none"> can produce all cell types in the body found in embryos 		1 1 1 1	AO1 4.1.2.3

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02.4	No risk / less risk of rejection / some people may not agree with using transplanted material		1	AO3 4.1.2.3
02.5	Risk of infection / ethical or religious objection / no track record of success as a treatment	Accept other reasonable suggestions	1	AO3 4.1.2.3
03.1	Gene – A section of DNA which codes for a characteristic DNA – The chemical that makes up genetic material Chromosome – A long strand of DNA	1 mark for one correct 2 marks for all correct	2	AO1 4.1.2.1
03.2	gene chromosome nucleus cell	1 mark for one structure in the correct order 2 mark for two structures in the correct order 3 marks for all structures in the correct order	3	AO1 4.1.2.1
03.3	chromosomes		1	AO1 4.1.2.1
04.1	Stage 2		1	AO1 4.1.2.2
04.2	Stage 1		1	AO1 4.1.2.2
04.3	ribosomes mitochondria		1 1	AO1 4.1.2.2

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05.1	A – nucleus B – chromosome C – gene		1 1 1	AO2 4.1.2.1
05.2	nucleus DNA chromosomes genes characteristic		1 1 1 1 1	AO1 4.1.2.1
05.3	two		1	AO1 4.1.2.1
06.1	growth / repair		1	AO1 4.1.2.2
06.2	(1 – DNA replicates) 2 – Chromosomes line up in the middle of the cell 3 – One set of chromosomes is pulled to each end of the cell 4 – Two nuclei are formed 5 – Cell membrane divides 6 – Two identical cells are formed	1 mark for one sentence in the correct order 2 marks for two sentences in the correct order 3 marks for three sentences in the correct order 4 marks for all in the correct order	4	AO1 4.1.2.2
06.3	Mitosis		1	AO1 4.1.2.2

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07.1	Stage		1	AO1 4.1.1.5
07.2	40 mm		1	AO2 4.1.1.5 MS 3d
07.3	Light: <ul style="list-style-type: none"> • lower magnification • can observe living organisms Electron: <ul style="list-style-type: none"> • greater magnification • can only observe dead organisms 		1 1 1 1	AO1 4.1.1.5
07.4	Daphnia would be damaged / killed by using electron microscope		1	AO2 4.1.1.5
08.1	DNA Chromosome genes		1 1 1	AO1 4.1.2.1
08.2	Specialised cells make different parts of the body.		1	AO1 4.1.2.2 4.1.1.4

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08.3	DNA replicates / two copies of the chromosomes form one set of chromosomes is pulled to each end of the cell the nucleus divides cytoplasm and/or cell membrane divide	Full marks can be awarded from a series of labelled diagrams	1 1 1 1	AO1 4.1.2.2
09.1	Meristem		1	AO1 4.1.2.3
09.2	C		1	AO2 4.1.2.3
09.3	DNA replication → mitosis → elongation → differentiation		1	AO1 4.1.2.3 4.1.1.4
09.4	Animal stem cells <ul style="list-style-type: none"> • Differentiation occurs at a very early stage • Differentiations produced are permanent Plant stem cells <ul style="list-style-type: none"> • Differentiation occurs throughout life • Differentiation can be reversed or changed 	1 mark for two answers correct 2 marks for all correct	2	AO1 1.2.3 1.1.4
10.1	Meristems contain undifferentiated cells		1	AO1 1.2.3
10.2	It produces genetically identical offspring / genetic material in the offspring derives from the parent plant only		1	AO1 1.2.3

Question	Answers	Extra information	Mark	AO / Specification reference
10.3	Any two from: <ul style="list-style-type: none">• Quicker• Cheaper• Plants can be transported over a large area / reproduced in a different area• Advantageous characteristics can be maintained		2	AO2 1.2.3