




Test Name: mitosis

Marking Guides

Question: 1 (297887)

Question	Expected Answers	Marks	Additional Guidance
(a) (i)	<i>plant cell / Y, has:</i> a wall ; chloroplasts ; vacuole ;	max 2	Credit reverse argument ACCEPT thylakoid, discs / membranes OR granum(a) IGNORE chlorophyll
(a) (ii)	A1 a vacuole ; E1 to take up water / to become turgid ; A2 cell wall thicker on one side ; E2 causes, cell to bend / open stoma(ta) ; A3 mitochondria ; E3 generates ATP (for active transport) ;	max 2	Mark adaptation (A) as stand-alone Ensure explanation (E) stated is appropriately linked to adaptation DO NOT CREDIT curved cell wall / thick cell wall unqualified ACCEPT close stoma(ta) if adaptation correct IGNORE ref to chloroplasts
(b) (i)	two homologous chromosomes circled ;	1	ACCEPT one circle around both chromosomes or two circles The two chromosomes must be of same length 

(b) (ii)	three chromosomes, one from each pair ; chromosomes drawn as one bar ;	2	Chromosomes should be of different lengths however if two are of similar length, look for different centromere position to award mark ACCEPT  DO NOT CREDIT two joined together at centromere 
Total		7	

Question: 2 (298496)

Question	Expected Answers	Marks	Additional Guidance
(a)	mitosis / mitotic division ;	1	DO NOT CREDIT meiosis, miosis ACCEPT mytosis
(b)	N ; L ; K ; J ;	4	Mark the first answer for each stage. If the first answer is correct and an additional answer is given that is incorrect or contradicts the correct answer then = 0 marks .
(c)	1 checking, genetic material / DNA / chromatin / chromosome(s) / genes, (for errors) ; 2 protein synthesis ; 3 synthesis / replication / increase in number of, organelles / named organelle ; 4 ATP production / respiration ; 5 <u>cell</u> growth / increase in <u>cell</u> , volume / size ;	2 max	Mark the first two suggestions only. IGNORE DNA , replication / synthesis ACCEPT checking for mutations DO NOT CREDIT check for <i>cell</i> mutations ACCEPT named step e.g. transcription / translation / described CREDIT one named organelle only ACCEPT centriole as organelle IGNORE organelle growth IGNORE release energy DO NOT CREDIT produce / create, energy (in form of ATP) IGNORE cytoplasm replicates

Question	Expected Answers	Marks	Additional Guidance
(d)	<i>in plant</i> (cell), plate / wall, forms (between new cells) ; <i>idea of :</i> cytokinesis starts from middle of cell ; (only) occurs in meristem ; no centrioles ; AVP ;	2 max	Mark the first two suggestions only. Read as prose unless candidate has indicated two points by bullets or numbers – in this case mark the first comment in each bullet. Assume response refers to plants unless stated otherwise. Accept reverse argument for animals. CREDIT in animal no cell plate IGNORE plants have cell walls unqualified ACCEPT cytokinesis starts at outer edge in animals ACCEPT cambium / specialised tissues / cells IGNORE ref (root) cap, root tip / shoot tip CREDIT in animals most, cells / tissues, can divide ACCEPT centrioles not used to pull chromatids apart DO NOT CREDIT no spindle fibres in plants e.g. nuclear envelope does not reform in most plant cells in telophase I (it does form in most animal cells)
Total		9	

Question: 3 (299257)

Question	Expected Answers	Marks	Additional Guidance
(a)	Q, T, P, R ; ; ;	4	Allocate marks for the following pairs: S – Q Q – T T – P P – R
(b) (i)	growth of cell / growth of organelles / increase number of organelles / synthesis of proteins ;	1	DO NOT ACCEPT 'growth' unqualified DO NOT ACCEPT refs to DNA replication IGNORE ref. to respiration ACCEPT named steps in protein synthesis
(b) (ii)	mutation / faulty DNA produced / error in copying ; daughter cells will not receive identical genetic information ; proteins / (daughter) cells, not made / do not function ;	2	ACCEPT 'daughter cells will not be clones' ACCEPT 'proteins / daughter cells function differently'
(c)	haploid / half genetic information / chromosome number is n ; genetic information not identical / produces genetically different cells ; 4 cells produced ;	2 max	ACCEPT use of comparative chromosome numbers as example DO NOT ACCEPT identical / not identical without 'genetic' DO NOT ACCEPT smaller cells
Total		9	

Question: 4 (300816)

Question		Expected Answer	Mark	Additional Guidance
	(a)	<p>(just behind) tip / apex , of root ;</p> <p>(just behind) tip / apex , of shoot ;</p> <p>cambium / pericycle / vascular bundle ;</p> <p>bud ;</p>	max 2	<p>Mark the first two suggestions.</p> <p>ACCEPT behind root cap IGNORE root unqualified</p> <p>IGNORE stem / root unqualified / shoot unqualified</p> <p>ACCEPT between xylem and phloem</p>
	(b) (i)	<p>1 chromosomes / chromatin / nucleus , can be seen / are visible ;</p> <p>2 determine / distinguish between , different stages (of mitosis / division / cell cycle) ;</p> <p>3 (staining) provide contrast (between cell structures) / AW ;</p> <p>4 (because) different , structures / chemicals , take up different amounts of stain ;</p>	max 2	<p>IGNORE ref to organelles throughout</p> <p>1 ACCEPT DNA for chromosomes / chromatin ACCEPT chromosomes / chromatin / DNA / nucleus , not normally visible</p> <p>3 IGNORE different structures can be seen (this is visibility not contrast)</p> <p>4 IGNORE different tissues or cells , take up different amounts of stain</p>
	(b) (ii)	mitosis / mitotic ;	1	spelling must be correct
Question		Expected Answer	Mark	Additional Guidance
	(c)	<p>Two marks for correct answer, even if no working shown</p> <p>18.00 ; ;</p>	2	<p>CREDIT 18 / 18.0</p> <p>If answer is incorrect or missing allow one mark for working</p> <p>100 – 82 or 4.34 + 3.23 + 3.23 + 7.20 or 18 somewhere in working</p>
	(d)	<p><i>in meiosis</i></p> <p>(cells produced are) not <u>genetically</u> identical ;</p> <p>one set of chromosomes / haploid ;</p> <p>(they are) gametes ;</p> <p>four cells produced ;</p>	max 1	<p>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</p> <p>IGNORE ref to cells produced by mitosis (as qu asks about meiosis)</p> <p>ACCEPT not clones Award in context of genetically different from parent or from each other</p> <p>ACCEPT half number of chromosomes / half genetic material</p>
		Total	[8]	

Question: 5 (300635)

Question			Answer	Marks	Guidance
	(a)	(i)	mitosis ;	1	Mark the first answer. If the answer is correct and an additional answer is given that is incorrect or contradicts the correct answer then = 0 marks
		(ii)	<p><i>idea that:</i> cells, <u>genetically</u> identical / have same DNA ;</p> <p>so both (daughter) cells receive a full, copy / complement ;</p>	2	<p>ACCEPT in context of identical to each other or identical to parent</p> <p>ACCEPT 'same genetic information/material'</p> <p>ACCEPT same / correct amount of DNA</p> <p>ACCEPT same / correct number of chromosomes</p> <p>IGNORE ref to clones unqualified</p> <p>IGNORE 'new cells need genetic material' without ref to full amount</p> <p>daughter cells have all the identical genetic material = 2 marks (mp 1 and 2)</p>
	(b)		<p>1 one maternal and one paternal / AW ;</p> <p>2 carry same <u>genes</u> ;</p> <p>3 carry, same / different, alleles ;</p> <p>4 (usually) same / similar, length ;</p> <p>5 centromere in same position ;</p> <p>6 same banding pattern ;</p> <p>7 pair up in meiosis / form bivalent ;</p>	3 max	<p>CREDIT 'same loci'</p> <p>IGNORE 'genetic material', 'genetically identical' 'genetic information'</p> <p>ACCEPT 'same shape' 'same size'</p> <p>IGNORE 'same pattern'</p>
	(c)	(i)	a, group / collection, of cells ; (cells) specialised / AW ; to perform a function(s) / working together ;	2 max	<p>IGNORE 'same' or 'different' cells</p> <p>ACCEPT same job</p>

Question			Answer	Marks	Guidance																										
		(ii)	<table><thead><tr><th>function</th><th>location</th></tr></thead><tbody><tr><td>acts as a surface</td><td>alveoli</td></tr><tr><td>or</td><td>or</td></tr><tr><td>short (diffusion) pathway ;</td><td>cheek lining</td></tr><tr><td>or</td><td>or</td></tr><tr><td></td><td>in blood vessels ;</td></tr><tr><td>move, mucus / AW</td><td>bronchioles</td></tr><tr><td>or</td><td>or</td></tr><tr><td></td><td>bronchi</td></tr><tr><td>or</td><td>or</td></tr><tr><td>secrete mucus ;</td><td>trachea</td></tr><tr><td>or</td><td>or</td></tr><tr><td></td><td>airways ;</td></tr></tbody></table>	function	location	acts as a surface	alveoli	or	or	short (diffusion) pathway ;	cheek lining	or	or		in blood vessels ;	move, mucus / AW	bronchioles	or	or		bronchi	or	or	secrete mucus ;	trachea	or	or		airways ;	4	<p>Mark the first answer in each box. If the answer is correct and an additional answer is given that is incorrect or contradicts the correct answer then = 0 marks</p> <p>Mark each box independently.</p> <p>IGNORE description e.g. 'one cell thick'</p> <p>ACCEPT glomerulus as blood vessel</p> <p>ACCEPT move fluid / liquid for mucus</p> <p>IGNORE removal of germs / dirt / substances / particles</p> <p>ACCEPT 'move ovum' and 'in fallopian tubes'</p> <p>ACCEPT removal of bacteria / fungal spores / dust if in mucus</p>
function	location																														
acts as a surface	alveoli																														
or	or																														
short (diffusion) pathway ;	cheek lining																														
or	or																														
	in blood vessels ;																														
move, mucus / AW	bronchioles																														
or	or																														
	bronchi																														
or	or																														
secrete mucus ;	trachea																														
or	or																														
	airways ;																														
			Total	12																											