

Question number	Answer	Notes	Marks
1 (a)	root appears / shoot appears / sprout / seed coat splits / eq;	ignore growth alone	1
(b)	1. oxygen; 2. respiration; 3. water / moisture / rain; 4. (activate) enzymes / reactions / hydrolysis / digestion / eq; 5. warmth / suitable temperature / optimum temperature; 6. enzymes / reactions; 7. light; 8. activate plant growth regulators / eq;	ignore air / pH 3. ignore humid 5. ignore temperature alone / heat four conditions and no explanations = 3 max	6

Total 7 marks

Question number	Answer	Notes	Marks																								
2(a)	<table border="1" data-bbox="528 299 1458 616"> <thead> <tr> <th data-bbox="528 299 672 429">tube</th> <th data-bbox="672 299 855 429">temperature</th> <th data-bbox="855 299 1003 429">water</th> <th data-bbox="1003 299 1142 429">light</th> <th data-bbox="1142 299 1323 429">% seeds germinated</th> <th data-bbox="1323 299 1458 429">average height in cm</th> </tr> </thead> <tbody> <tr> <td data-bbox="528 429 672 489">A</td> <td data-bbox="672 429 855 489">room)</td> <td data-bbox="855 429 1003 489">no</td> <td data-bbox="1003 429 1142 489">(yes)</td> <td data-bbox="1142 429 1323 489">0</td> <td data-bbox="1323 429 1458 489">0.0</td> </tr> <tr> <td data-bbox="528 489 672 550">B</td> <td data-bbox="672 489 855 550">room</td> <td data-bbox="855 489 1003 550">(yes)</td> <td data-bbox="1003 489 1142 550">yes</td> <td data-bbox="1142 489 1323 550">90</td> <td data-bbox="1323 489 1458 550">2.3(1);</td> </tr> <tr> <td data-bbox="528 550 672 616">C</td> <td data-bbox="672 550 855 616">fridge</td> <td data-bbox="855 550 1003 616">yes</td> <td data-bbox="1003 550 1142 616">no;</td> <td data-bbox="1142 550 1323 616">10;;</td> <td data-bbox="1323 550 1458 616">(0.3)</td> </tr> </tbody> </table>	tube	temperature	water	light	% seeds germinated	average height in cm	A	room)	no	(yes)	0	0.0	B	room	(yes)	yes	90	2.3(1);	C	fridge	yes	no;	10;;	(0.3)	<p>First three columns correct for one mark</p> <p>One mark for two % germination correct</p> <p>Two marks for all % germination being correct</p> <p>One mark for both average height being correct</p>	4
tube	temperature	water	light	% seeds germinated	average height in cm																						
A	room)	no	(yes)	0	0.0																						
B	room	(yes)	yes	90	2.3(1);																						
C	fridge	yes	no;	10;;	(0.3)																						
(b)	<p>1. seeds split / seeds burst / sprouts / eq;</p> <p>2. <u>root</u> / <u>radicle</u> seen / grows / eq;</p> <p>3. <u>shoot</u> / <u>plumule</u> / <u>stem</u> seen / grows / eq;</p>	<p>Ignore leaf/plant emerges / increase in height / become seedlings</p>	2																								
(c)	<p>temperature;</p> <p>water / moisture;</p> <p>light;</p> <p>oxygen;</p>	<p>Allow one mark for two correctly named and two marks for three correctly named</p> <p>Location = 0</p>	2																								

Question number	Answer	Notes	Marks
(d)	1. they germinate/grow / eq; 2. reference to (room) temperature and water;	1. Ignore same result as tube B 2. Ignore light / oxygen	2
(e)	(no oxygen) no respiration;		1

Total 11 marks

Question number	Answer	Notes	Marks
3 (a) (i)	B;		1
(ii)	A;		1
(iii)	C;		1
(b) (i)	zygote;		1
(ii)	mitosis ;		1
(iii)	diploid with 46 chromosomes;	ignore tick cross hybrid two ticks present = 0	1
(c)	placenta; from mother's blood; diffusion / high conc. to low conc.; large surface area / thin / eq; <u>umbilical cord</u> ;	ignore gas exchange / ignore carried	3
		Total	9

Question number	Answer	Notes	Marks
4 (a) (i)	the greater the mass the longer the gestation period / positive correlation / eq;	Allow converse	1
(ii)	1. roe; 2. long gestation period / longer than Sika / eq; 3. small mass / same mass (as Sika) / mass same as deer with gestation 77 days less / eq;	long gestation period compared to its mass = 2	3
(b)	1. <u>diffusion</u> ; 2. <u>glucose</u> / <u>oxygen</u> ; 3. respiration / energy / ATP; 4. amino acids; 5. protein synthesis; 6. vitamins / named vitamin / minerals / named mineral / fatty acids / glycerol; 7. remove <u>carbon dioxide</u> / remove <u>urea</u> ;	6. Ignore nutrients	Max 4

Total 8

Question number	Answer	Notes	Marks															
5 (a)	<table border="1" data-bbox="539 303 1106 701"> <thead> <tr> <th data-bbox="539 303 640 371">Test tube</th> <th data-bbox="640 303 893 371">Factor being tested</th> <th data-bbox="893 303 1106 371">Seeds germinated</th> </tr> </thead> <tbody> <tr> <td data-bbox="539 371 640 447">A</td> <td data-bbox="640 371 893 447">(no) water / moisture</td> <td data-bbox="893 371 1106 447">no;</td> </tr> <tr> <td data-bbox="539 447 640 523">B</td> <td data-bbox="640 447 893 523">control (all factors present)</td> <td data-bbox="893 447 1106 523">(yes)</td> </tr> <tr> <td data-bbox="539 523 640 598">C</td> <td data-bbox="640 523 893 598">(oxygen)</td> <td data-bbox="893 523 1106 598">no;</td> </tr> <tr> <td data-bbox="539 598 640 701">D</td> <td data-bbox="640 598 893 701">temperature / warmth / heat / cold</td> <td data-bbox="893 598 1106 701">no;</td> </tr> </tbody> </table>	Test tube	Factor being tested	Seeds germinated	A	(no) water / moisture	no;	B	control (all factors present)	(yes)	C	(oxygen)	no;	D	temperature / warmth / heat / cold	no;	<p data-bbox="1167 368 1357 462">One mark for each correct row</p> <p data-bbox="1167 503 1368 565">Ignore humidity for A</p>	3
Test tube	Factor being tested	Seeds germinated																
A	(no) water / moisture	no;																
B	control (all factors present)	(yes)																
C	(oxygen)	no;																
D	temperature / warmth / heat / cold	no;																
(b)(i)	radicle / plumule / shoot / root / sprout / seed split / testa split / coat split / eq;	Ignore grow alone	1															
(b)(ii)	<p data-bbox="481 1006 1093 1068">1. species / type / age / genotype of seed / size of a seed / mass of a seed;</p> <p data-bbox="481 1109 1005 1171">2. amount of seeds / mass of seeds / number of seeds;</p> <p data-bbox="481 1212 595 1244">3. light;</p>		Max 2															

(c)(i)	starch / lipid / oil / protein;	Ignore carbohydrate Allow fat	1
(ii)	<ol style="list-style-type: none"> 1. energy / respiration; 2. lack leaves / no light / under the ground / eq; 3. cannot carry out photosynthesis; 		Max 2
(d)	<ol style="list-style-type: none"> 1. ignite seed / eq; 2. transfer under tube of water / use of calorimeter; 3. quick transfer / complete combustion / relight; 4. mass of water / volume of water / eq; 5. measure increase in temperature / measure temperature at start and at end; 6. repeat / eq; 	Allow Mp4 and Mp5 from formula	Max 4

Question number	Answer	Notes	Marks
6(a)	1. protects fetus; 2. cushions / shock absorber / supports / eq;		2
(b)(i)	1. oxygen; 2. glucose; 3. amino acids; 4. vitamins / named vitamins; 5. minerals / named mineral / ions / salts; 6. antibodies; 7 water;	Mineral ions and proteins on same line = 0 Minerals and proteins on different lines = 1 Mp 5 ignore nutrients / food	2 max
(ii)	1. carbon dioxide; 2. urea;	Mp 2 ignore urine	2
(c)	1. <u>villi</u> ; 2. large surface area; 3. blood supply / capillaries; 4. concentration gradient; 5. short distance / thin walled / eq;	blood vessels close to each other get Mp 3 and Mp 5	3 max

Total 9 marks