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. ig re humid 5. ig re temperature alone / heat four conditions and no explanations = 3 max	6

Total 7 marks

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>2(a)</td><td>
<table>
<tr><th>tube</th><th>te erature</th><th>water</th><th>light</th><th>% seeds germinated</th><th>average height in cm</th></tr>
<tr><td>A</td><td>room)</td><td>no</td><td>(yes)</td><td>0</td><td>0.0</td></tr>
<tr><td>B</td><td>roo</td><td>(yes)</td><td>yes</td><td>90</td><td>2.3(1);</td></tr>
<tr><td>C</td><td>fridge</td><td>yes</td><td>no;</td><td>10;;</td><td>(0.3)</td></tr>
</table>
</td><td>First three columns correct for one mark

One mark for two % germination correct

Two marks for all % germination being correct

One mark for both average height being correct</td><td>4</td></tr>
<tr><td>(b)</td><td>1. seeds split / seeds burst / sprouts / eq;

2. oot / radicle seen / grows / eq;

3. shoot / plumule / stem seen / grows / eq;</td><td>Ignore leaf/plant emerges / increase in height / become seedlings</td><td>2</td></tr>
<tr><td>(c)</td><td>temperature;

water / moisture;

light;

oxygen;</td><td>Allow one mark for two correctly named and two marks for three correctly named

Location = 0</td><td>2</td></tr>
</table>

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. Ign e 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; umbilical cord;	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. diffusion; 2. glucose / oxygen; 3. respiration / energy / ATP; 4. amino acids; 5. protein synthesis; 6. vitamins / named vitamin / minerals / named mineral / fatty acids / glycerol; 7. remove carbon dioxide / remove urea;	6. Ign e nutrients	Max 4

Total 8

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>5 (a)</td><td>
<table>
<tr><th>Test tube</th><th>Factor being tested</th><th>Seeds germinated</th></tr>
<tr><td>A</td><td>(no) water / moisture</td><td>no;</td></tr>
<tr><td>B</td><td>con rol (all factors present)</td><td>(yes)</td></tr>
<tr><td>C</td><td>(oxygen)</td><td>no;</td></tr>
<tr><td>D</td><td>t mperature / warmth / heat / cold</td><td>no;</td></tr>
</table>
</td><td>One mark for each correct row

Ignore humidity for A</td><td>3</td></tr>
<tr><td>(b)(i)</td><td>radicle / plumule / shoot / root / sprout / seed split / testa split / coat split / eq;</td><td>Ignore grow alone</td><td>1</td></tr>
<tr><td>(b)(ii)</td><td>1. ecies / type / age / genotype of seed / size of a seed / mass of a seed;

2. amount of seeds / mass of seeds / number of seeds;

3. light;</td><td></td><td>Max 2</td></tr>
</table>

(c)(i)	starch / lipid / oil / protein;	Ignore carbohydrate Allow fat	1
(ii)	1. energy / respiration; 2. lack leaves / no light / under the ground / eq; 3. cannot carry out photosynthesis;		Max 2
(d)	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. villi; 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