Question number	Answer	Notes	Marks
1 (a)	(organism that) causes disease / causes infection;	Ignore causes harm Ignore causes illness	1
(b)	1. mutation; 2. (involves) gene / DNA / allele / genetic material / eq; 3. random / chance / rare / spontaneous;	Ignore evolution / natural selection	2 max
(c)	*Candida* (*albicans*) / HIV;		1
(d)	superbugs;		1
(e)	make sure <u>all</u> killed / make sure <u>all</u> destroyed / to find antibiotic that is effective / works / kills them <u>all</u> / eq;	Ignore immune Ignore infection killed Ignore killed alone	1

(f)	1. antigen OR dead / weakened / attenuated / inactive pathogen bacterium / virus; 2. memory cells / memory lymphocytes; 3. antibody; 4. soon(er) / fast / quick / more of antibody / eq;	Mp 1 ignore microorganism / microbe Mp1 Ignore harmless Mp 3 allow antibody whatever the source Mp 3 ignore antitoxin Mp 4 ignore idea that pathogen has less time to cause disease	3 max
(g)	1. those with alligacin survive / not killed / live / eq; 2. reproduce / breed / produce offspring; 3. pass on allele / gene / DNA for alligacin;	Mp 1 ignore numbers Mp1 ignore survival of the fittest alone Mp 3 ignore characteristic	3
(h)	1. protect food / prey / eq; 2. protect mates / females / eq; 3. protect nests / protect young / protect eggs / protect offspring / eq;	Ignore protect habitat / protect territory / from other alligators / predators	2 max

Total 14 marks

Question number	Answer	Notes	Marks
2 (a)	species from different area / another country / foreign / non-native / new / moves in / eq; compete / replace / take over / win / spreads / affect survival / threatens wildlife / eq;	ignore invades / attacks / unwanted / cause harm	2
(b)	66.1% / 66.08 / 66.079 / 66.0786 / 66.07865 / 66.078648;	allow one mark for 1,798 and 2,721 in working	2
(c)	lacks predators / eq; rhizomes / underground stems need to be killed / rhizomes / underground stems hard to remove / eq;	ignore large network of underground stems ignore reference to climate	max 1
(d)	1 competition for light / blocks light; 2 (less) photosynthesis; 3 no bare soil / no space to grow; 4 (less) germination / eq; 5 competition for water / minerals / nutrients;		max 2
(e)	named pest / aphid / eq; named predator / ladybird / eq;	allow snake eat frogs / eq not just any predator prey relationship eg not birds eating worms no credit if organism chosen is not a pest	2

Question number	Answer	Notes	Marks
2 (f) (i)	phloem;	allow phonetic spelling	1
(ii)	(less) sucrose / carbohydrate / sugar / amino acids; (less) respiration / (less) energy / (less) protein;	ignore nutrients / minerals / glucose	2
(g)	(no) food chain effect / (no) harm to native species / (no) harm to other plants / other plants not eaten / affect other species / eq;		1
		Total	13

Question number	Answer	Notes	Marks
3	nucleic; RNA / ribose nucleic acid; HIV / (human) immuno deficiency; immune; white / leukocyte / lymphocyte / eq; antibodies / antitoxins; vaccination / vaccine / inoculation / immunisation / eq;	ignore phagocytes	Max 7

Total 7 marks

Question number	Answer	Marks
4 (a)	32 / -32;	1
(b)	S scales linear; L lines neat and through points; A axes correct way and labelled % and weeks; P points plotted accurately; K key; (one line no L,P and K) (bar chart only A and K)	5
(c)	(i) (both) decrease (in mass) / eq; (ii) larger mesh decrease is more / eq;	2
(d)	denitrifying (bacteria); (nitrates) to ammonia; (nitrates) to nitrite; (nitrates) to nitrogen (gas);	Max 2

Total 10 Marks

Question number	Answer	Notes	Marks
5 (a)	1. break wn / broken down; 2. large molecules) to small; 3. (insoluble) o soluble;	Complex to simple substances = 0 Ignore examples	Max 2
(b)	1. no) insulin; 2. gh blood glucose level / excess blood glucose / glucose not converted to glycogen / less glucose absorbed by cells; 3. not (re)absorbed (in kidney) / eq;	2. gnore blood sugar 2. No control of blood glucose = 0	3
(c)	1. amylase / carbohydrase; 2. l ase; 3. protease / trypsin / peptidase;	Ignore maltase Reject list on same line containing incorrect enzyme	Max 2
(d)	insulin/hormone travels in blood / insulin/hormone travels in blood vessels / (pancreas is an) endocrine gland;		1

(e)	1. n injection / inject with water; 2. to show changes are due to insulin / (valid) comparison;	Ignore injecting into dogs with intact pancreas Eg. Compare with dogs that had insulin extract injected	 2
(f)	hepatic artery;		1
(g)	insoluble / does not dissolve / no osmotic effect / eq;	Allow converse for glucose	Max 1
(h) (i)	change in glucose (level) / high glucose / low glucose;	Ignore amount of glucose Ignore amount of glucose eaten	1
(ii)	pancreas / Islets of Langerhans;		1

(iii)	pancreas / Islets of Langerhans / liver / muscle ;		1
(iv)	insulin release / glucagon release / change in glucose (level) / increase/decrease in glucose (level) / glucose to glycogen / glycogen to glucose / uptake of glucose / glucose levels return to normal / glucose absorbed / eq;	Ignore negative feedback alone	1