

Food Security and Farming MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS						
a)i)	wheat → humans chain transfers 10 times more energy than wheat → pigs → humans chain or wheat → pigs → humans chain transfers 810 000 (kJ per hectare) less	allow 10% if given as a comparison e.g. one is 10% of the other ignore less unqualified	1						
a)ii)	any one reason for energy loss from pigs e.g.: •movement •(maintaining) body temperature •waste materials •not all parts of pig eaten by human •because there is an extra stage (pigs) in the food chain and energy is lost at each stage	ignore respiration, growth ignore heat unqualified allow named examples allow longer food chain so more energy lost	1						
b)	<table border="1"> <thead> <tr> <th>Level 1 (1-2 marks)</th> <th>Level 2 (3-4 marks)</th> <th>Level 3 (5-6 marks)</th> </tr> </thead> <tbody> <tr> <td>There is a basic description of at least one factory farming method or identification of an advantage or disadvantage of factory farming.</td> <td>There is a description of at least one factory farming method and an advantage or disadvantage is explained.</td> <td>There is a description of factory farming methods and advantage(s) and disadvantage(s) are explained.</td> </tr> </tbody> </table>	Level 1 (1-2 marks)	Level 2 (3-4 marks)	Level 3 (5-6 marks)	There is a basic description of at least one factory farming method or identification of an advantage or disadvantage of factory farming.	There is a description of at least one factory farming method and an advantage or disadvantage is explained.	There is a description of factory farming methods and advantage(s) and disadvantage(s) are explained.		6
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	<p>factory farming methods e.g.:</p> <ul style="list-style-type: none"> •Kept in cramped conditions / battery hens / calf crates / pig barns / fish tanks •Controlled temperature / heating •Controlled feeding / modified food given / growth hormones •Controlled lighting •Treated with prophylactic antibiotics <p>Advantages e.g.:</p> <ul style="list-style-type: none"> •Increased efficiency / profit / greater food production / cheaper food / faster growth •Farmer can have more livestock •Less energy is lost through movement •Less energy is used keeping warm •(Food is high in calories / protein) so animals will grow faster / lay more eggs 								

	<ul style="list-style-type: none"> •Easier to vaccinate all the animals •Easier to protect animals from predators •Antibiotic treatment stops infections in animals Disadvantages e.g.: <ul style="list-style-type: none"> •Stress / cruelty / inhumane / unethical •Restricted movement / overcrowding •Faster spread of diseases •Antibiotics in the food chain / residual chemicals in the food chain •Wasting fossil fuels / increasing global warming •Increased pollution from animal waste and from additional transport 	
Total marks		8

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	76.0 / 76	correct answer with or without working gains 2 marks allow 76.04 for 2 marks allow 76.04 with extra decimal places eg 76.042 for 1 mark for 1 mark	2
a)ii)	mass of fish declines (until 2008) (due to an) increase in fishing / overfishing and then rises (until 2010) (which could be due to) quotas / net restrictions working	ignore use of numbers allow number of fish decline (until 2008) allow any reasonable suggestion, such as countries swapping quotas or restrictions on fishing during breeding seasons ignore less fishing if no other marks awarded allow 1 mark for a decrease in mass and an increase in mass if answer relates to sustainable fishing	1 1 1 1
a)iii)	(this is due to) public awareness / demand	allow legislation / rules	1
b)	fishing quotas / bans (small) net / mesh size	if size of net is stated then it must be smaller if size of mesh is stated then it must be larger	1
c)	(fish) cannot move freely / as much	do not allow 'no energy is lost' ignore references to less heat loss though controlling body	1

	(therefore) less energy loss from the fish	temperature ignore references to respiration accept 'high-protein food (for making cells)'	1
	(there is) more food available / better quality food / fed more often		1
	(so) there is more energy for growth or (more food) is converted to biomass		1
Total marks			13

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	scientists figures based on research / calculations / data or scientists sample whole area fishermen based on impression / hearsay / experience or fishermen fish in well-stocked / limited areas	ignore reasons based on bias scientists sample a wider area = 2 marks fishermen only fish in well-stocked areas = 2 marks if no marks gained fishermen's opinion and scientists' opinion gains 1 mark	1 1
b)	any two from: <ul style="list-style-type: none"> • economic considerations • political impact • pressure groups or fears of extinction	eg fear for jobs, profits, big demand for cod eg allow EU / government decide or laws will be passed	2
Total marks			4

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any one from: <ul style="list-style-type: none"> ✗ increase / give light ✗ increase temperature / make warmer ✗ increase / give CO2 ✗ add fertiliser / nutrients / minerals / named 	award marks if the method by which these could be done is given eg leave lights on all night or use a heater allow nitrogen ignore 'food'	1
b)i	any two from:	accept converse if clear that answer	2

	<ul style="list-style-type: none"> ✗ cheaper ✗ better quality / flavour ✗ available all year 	<ul style="list-style-type: none"> refers to use of British tomatoes allow grow faster / more grown ignore size allow 'Fair Trade' 	
b)ii)	<p>any two from:</p> <ul style="list-style-type: none"> ✗ greater distance or more food miles or more transport ✗ transport needs (more) energy / fuel ✗ reference to eg greenhouse effect / global warming / pollution / CO2 release / carbon footprint 	<ul style="list-style-type: none"> idea of more needed only once ignore ozone 	2
Total marks			5

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	5		1
b)	<p>any one from:</p> <ul style="list-style-type: none"> • more light • warm(er) / hot • more water / lot of rain <p>increased / more photosynthesis</p>	<ul style="list-style-type: none"> allow in either section allow more sun / sunnier allow in either section allow more biomass / carbohydrate / named (made) do not allow food allow enzymes / metabolism faster NB for 2 marks this must be linked to heat to gain 2 marks more / increased must be mentioned at least once 	<p>1</p> <p>1</p>
c)	<p>less pollution / named pollutant eg carbon dioxide / 'fumes' / emissions</p> <p>less fuel used / less transport / named transport</p>	<ul style="list-style-type: none"> allow examples of effect of less pollution eg less global warming / less acid rain allow any relevant environmental effect eg imported diseases ignore 'less distance' / importing allow 'less distance travelled' / 'less travel' allow smaller carbon footprint once 	<p>1</p> <p>1</p>

		only for either mark	
Total marks			5

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	30	award both marks for correct answer, irrespective of working $100 - (33 + 27 + 10)$ or equivalent for 1 mark	2
b)	2 or 1.98	award both marks for correct answer, irrespective of working $(33 / 100) \times 6$ or equivalent for 1 mark	2
c)	respiration		1
d)i)	less / no heat loss / movement	do not accept 'energy' / warmth unqualified	1
d)ii)	any reference to cruelty eg stress to calf / cramped conditions	ignore references to disease / hygiene	1
Total marks			7