Selective Breeding and Genetic Engineering MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	genes chromosomes		1 1
b)i)	higher yield less use of pesticides		1 1
b)ii)	any two from: • uncertain about effects on health • fewer bees • might breed with wild plant • seeds only from one manufacturer		2
Total marks			6

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any two from: eg • same volume of solution • left for same length of time •same temperature •same oxygen •same pH • same number of invertebrates / animals • same age / stage of invertebrates / animals	do not allow same size of container do not allow same number of species	2
b)	line of best fit / curve / point to point drawn going through 240-260 and 25 correct interpolation to X axis	if no work on graph allow 250	1 1
c)i)	(C) 50% killed at lowest / low copper concentration	 ignore least survivors	1
c)ii)	any two from: •involves counting •easy to do •invertebrates more sensitive • needs less / no apparatus	 easy to count gains 2 marks	2
Total marks			7

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	chromosomes	allow DNA	1
a)ii)	enzymes		1
b)	asexual reproduction / no gametes / no fusion / only one parent cells all contain same genetic information / same genes (as parent) / same DNA	ignore clones	1 1
c)	can spray crop with herbicide – only weeds killed	crop survives herbicide insufficient	1
d)	any one from: • fears / lack of knowledge about effects of GM food on health • crop plants may pass on gene to wild plants • encourages use of herbicides	allow 'think that GM food is bad for health' ignore not natural or against religion	1
Total marks			6

QUESTION 4

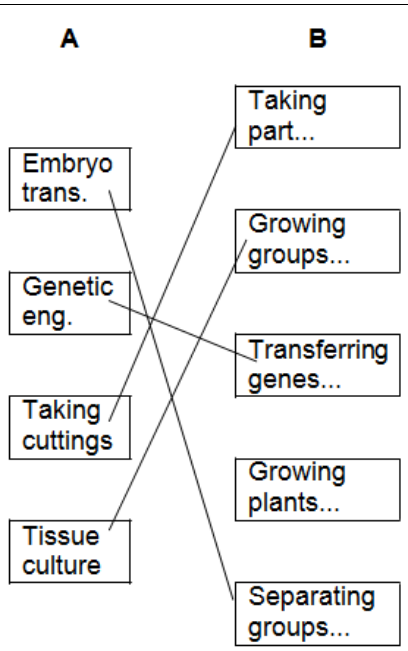
QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	sexual		1
b)	chromosome		1
c)i)	any two from: • genetic-engineering can produce fast-growing food animals • genetic engineering can be used to clone animals in danger of extinction • using GM animals can reduce the number of animals used in medical research	ignore answers that do not relate to list	2
c)ii)	GM animals might escape and breedwith wild animals animals have the right to be free from genetic modification	ignore answers that do not relate to list	1 1

Total marks			6

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	chromosomes	ignore gene / DNA	1
b)	pros eg any two from: •overcomes shortage of human eggs / rabbits produce lots of eggs •ethical / religious issues with using human embryos •reduces tests on (adult) humans •may provide cure for / cause of disease •embryo not allowed to develop beyond 14 days •no harm to rabbit •99.5 % human genetic information so very similar to human or will react in the same way	to obtain 3 marks candidates must give one reasonable pro and one reasonable con ignore all embryos identical	max 2
	cons eg any two from: •ethical / religious objections to mixture of human and rabbit genes •ethical issues with experimenting with rabbits •ethical / religious objections to killing embryos •0.5% of rabbit genetic information might affect results •14 days too short a time to get results	allow some people object to using rabbits / cruel to rabbits	max 2
	plus conclusion eg • possibility of cure does / does not outweigh ethical / religious objections • cure does not justify mixing human and animal genes / killing embryos	Note: the conclusion mark cannot be given unless both an advantage and a disadvantage have (already) been given do not award the mark if the conclusion only states that advantages outweigh disadvantages	1
Total marks			6

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
		1 mark for each correct line mark each line from left hand box two lines from left hand box cancels mark for that box	4
Total marks			4