Culturing Microrganisms 2 MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	heat at 120oC for 30 minutes		1
b)	no bacteria near the mould or nothing grows near Penicillium or gap between bacteria and Penicillium or bacteria gone / killed / destroyed near Penicillium		1
c)i)	valid / reliable / representative	not 'accurate' ignore 'fair'	1
c)ii)	6		1
c)iii)	2		1
c)iv)	48 to 60		1
d)	any two from: \(\) temperature / heat / suitable temperature range eg 25-40°C \(\) pressure \(\) (concentration of) oxygen \(\) food / nutrients \(\) ions / correct eg / NH3 / NH4+ /nutrients \(\) wastes / named wastes eg. Carbon dioxide / lactic acid	do not allow keep cool ignore water / nutrient agar allow nutrients only once	2
Total marks			8

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any one suitable product: eg penicillin / antibiotic / other named antibiotic mycoprotein / described /quorn lactic acid / yoghurt enzymes ethanol / alcohol / beer / wine hormones / insulin / GH / somatotrophin blood-clotting protein / factor VIII methane / biogas vaccines		1

b)i)	otherwise too many colonies to count or too many bacteria to		1
	count or make it easier to count		
b)ii)	a colony is many bacteria or cannot see one bacterium		1
	each bacterium produces one colony		1
c)	correct answer: 8 800 000 /8.8 million / 8.8 × 10 ⁶	correct answer gains 2 marks with or without 1st two lines if answer incorrect, 1 error in calculation eg 88 000 / 880 000 gains 1 mark or allow error carried forward from incorrect 1st line for 1 mark	2
d)i)	on graph: line starts at x and decreases downward sloping s - shaped curve not reaching zero before 30 hours		1 1
d)ii)	(graph A) rises: because glucose is used for reproduction / growth / cell division / multiplication		1
	(graph A) falls: less / no glucose available or glucose is limiting		1
d)iii)	causes some bacteria to die method B counts living and dead bacteria / includes dead bacteria		1
Total marks	Estitudy morado doda sactoria		12

QUESTION 3

QUESTION	ANSWER		EXTRA	EXTRA INFORMATION	
a)	0 marks	Level 1 (1-2 marks)	Level 2 (3-4 marks)	Level 3 (5-6 marks)	6
	No relevant content.	There is a brief description of at least one of the stages (pre- inoculation, inoculation, post-inoculation).	There is a simple description of at least to stages and an explanati of at least one of them.		
	example	s of biology points	made in the res	ponse:	
	Pre-inoc				
	Petri dish and agar sterilised before use				
	to kill unwanted bacteria				
		ting loop passed the	_	terile swab	
		erilise / kill (other)	Dacteria		
	 Inoculation loop/swab used to spread/streak bacterium onto agar 				
	1			=	
	 Allow other correct methods, eg bacterial lawns lid of Petri dish opened as little as possible 				
	• to pre	event microbes fro	m air entering		
	Post-inoculation				
	•sealed with tape				
	 to prevent microbes from air entering incubate to allow growth of bacteria 				
b)i)		killed / destroyed		fights / attacks / stops	growth 1
	Dacteria	kilieu / destroyeu	/ got i	•	giowiii
b)ii)	Might be	e correct			1
	largest a	rea / space where	no		
	bacteria	are growin	ng		
	_	ot be correct			1
	1 -	ore evidence as) D	,		
		ful to people / ani	mals /		
	surfaces		+h		
	1	vork differently wi t bacteria	u 1		
		ectants may be dif	ferent		
	concenti				
		not last as long			
Total marks					9

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	A (inoculating / wire) loop	allow (agar) plate	1
	B Petri dish	ignore ref to culture medium	1

b)i)	to kill (unwanted) bacteria /	allow fungi	1
	microorganisms /microbes	ignore viruses / germs	
b)ii)	Using a flame		1
b)iii)	any one from:	ignore reference to gases	1
	• so bacteria / microorganisms	ignore viruses / germs	
	/ microbes / pathogens /		
	fungi (growing in dish) do not		
	get out		
	• so bacteria / microorganisms	ignore viruses / germs	
	/ microbes / pathogens /		
	fungi (from the air) do not		
	get in		
c)	25 °C		1
Total marks			6