Drugs
Mark Scheme 2

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Drugs
Paper Type	(Extended) Theory Paper
Booklet	Mark Scheme 2

Time Allowed: **40 minutes**

Score: **/33**

Percentage: **/100**

Question		Answers	Marks	Additional Guidance
1	**(a)**	**(i)** mycelium **;**	[1]	
		(ii) hypha **;**	[1]	
	(b)	hyphae, secrete / release **;** enzymes **;** amylase **;** breaks down starch to, maltose / glucose **;** protease **;** breaks down protein to, peptides / amino acids **;** products absorbed **;** by diffusion / active uptake **;**	[max 4]	**ignore** produce **accept** soluble nutrients if no digestion given

1	(c)	(i)	antibiotics diffuse through the agar ; (some) kill / stop reproduction of, bacteria ref to not all antibiotics being effective	[max 2]	
		(ii)	bacteria grew around the discs ; bacteria are <u>resistant</u> to antibiotics 1 and 5 ; any explanation of resistance ;	[max 2]	**R** immune bacteria break down antibiotic
		(iii)	kill all the bacteria ; some still present even after person feels better ; prevents bacteria becoming resistant ; prevents selection of resistant strain ;	[max 2]	**accept** description of selection even if the term is not used
				[Total: 12]	

Question	Answers	Marks	Guidance
2 (a)	drug / medicine(AW) / chemical / substance ; produced by microorganisms ; **A** ref to idea of synthetic analogues kills / stops, growth of, bacteria / other microbes ;	[max 2]	medicine / AW e.g. '(antibiotic) used to treat infection' is worth a mark **A** examples e.g. penicillin qualified 'penicillin is an antibiotic that kills bacteria/AW' would gain 2 marks **penicillin alone cannot score** **R** viruses
(b) (i)	(most) were killed by the antibiotic ; *ora*	[1]	
(ii)	(only) antibiotic-resistant bacteria transferred from **B** / (only) resistant bacteria in **C** / fewer resistant bacteria in **B** / non-resistant bacteria were killed in **B** ;	[1]	
(c)	resistant bacteria, survive / not killed / are selected for / selection pressure ; eventually, all / many, become resistant ; AVP ; e.g. any consequence of overuse / antibiotic no longer effective ;	[max 2]	**R** references to **immunity** as alternative to resistance
(d)	X-rays caused mutations ; change in DNA ; ref to, gene / allele ; mutation causes antibiotic resistance ;	[max 3]	ALLOW radiation
(e)	assume answer is about bacteria unless told otherwise, accept ora / AVP for viruses e.g. capsid bacteria have cells ; cell wall ; cell membrane ; cytoplasm ; ribosome(s) ; flagellum ; capsule ; AVP ;	[max 2]	**R** nucleus in bacteria IGNORE composition of cell wall

Question		Answers	Marks	Guidance
2	(f)	HIV infects lymphocytes ; T helper (lymphocytes / cells) ; fewer antibodies produced **;** infected cells not killed (by immune system) ; phagocytes less effective ; increased susceptibility to / longer recovery time for, (infectious) diseases / named disease (TB) ; cancers ; opportunistic diseases ; ref to AIDS ;	[max 4]	
			[Total: 15]	

Question		Answers	Marks	Additional Guidance
3 (a)	1 2 3 4 5	positive correlation **;** more antibiotics used, more bacteria are resistant **;** variation between countries at each dosage **;** data quote 1 **;** data quote 2 **;** e. countries with antibiotic use of <1%, less than 10% bacteria are resistant countries with antibiotic use of 3(+)%, more than 40% bacteria are resistant variation – e.g. some countries at 2.5%, with 4.5% and 32.5%	[max 3]	data quotes must have figure (or range) for use of antibiotics and % resistance
(b)	 1 2 3 4 5 6 7 8 9 10	*accept* ora bacteria are resistant to some antibiotic **;** ref. to selection **;** result of overuse **;** some are specific **;** some antibiotics used for rare disease(s) **;** some only used as last resort **;** have (many / unpleasant) side-effects / harmful / cause allergy **;** too expensive **;** cannot be used on children **;** AVP **;** ref. to other uses, e.g. on animals	[max 3]	**R** <u>people</u> become, immune / resistant
			[Total: 6]	