

Question	E 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	E Answers	Marks	Guidance
2 (f)	HIV infects <u>lymphocytes</u> ; 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 ; <u>opportunistic</u> diseases ; ref to AIDS ;	[max 4]	
		[Total: 15]	

- 3 (a) annelids are segmented ; (or v.v) Ⓐ ref. to rings
annelids have identifiable / terminal + mouth / anus ; (or v.v)
annelids can have clitellum ; (or v.v)
annelids (may) have + chaetae / bristles ; (or v.v) [max. 2]
- (b) (animal feature)
ref. to secretion of enzymes / heterotrophic nutrition ;
Ⓐ inability to photosynthesis
ref. to production of glycogen ;
ref. to presence of chitin ; [max. 1]
- (plant feature)
presence of cell wall ;
presence of vacuole ; [max. 1]
- (c) diagram recognisable + reasonable size ;
MARK TWO FEATURES DRAWN AND LABELLED FROM:
RNA / DNA strand ;
protein coat / capsid ;
envelope ;
capsomere ; [max. 3]
- (ii) ref. to invasion of lymphocytes ;
so no production of antibodies ; (linked to first point)
ref. to decrease in body's ability to fight infection ; [3]
- [max.10]

4 (a)	substance		direction of movement	reason	4	one mark per row A nitrogenous waste
	amino acids		to fetus / from mother	make proteins / translation / growth / make cells / AW;		
	carbon dioxide		from fetus	waste gas from respiration		
	glucose		fetus / from mother	(release) energy / respiration / stored as glycogen;		
	oxygen		fetus / from mother	(gas for) respiration;		
	urea		f fetus / to mother	excretion / metabolic waste;		

Question	Answer	Marks	Additional Guidance
4 (b)	iron: for red blood cells/haemoglobin/to transport oxygen/prevent anemia; vitamin D: absorption of calcium; growth/formation/strengthening, of bones/teeth; preventing rickets;	max 2	max 1 from vitamin D
(c) (i)	lymphocytes /white blood cells/leucocytes;	1	white cells unqualified
(ii)	provides (passive) <u>immunity</u> ; protects against, infection/illness/disease/pathogen(s)/AW; reference to disease(s) mother has had; immune system of babies not yet developed; any one function of antibodies;	max 3	functions of antibodies: <ul style="list-style-type: none"> • stop pathogens spreading (in the body) • stop pathogens entering cells • stop pathogens dividing/reproducing/ increasing in number • cause pathogens to, clump/agglutinate • immobilise bacteria • kill bacteria • make it easier for phagocytes to ingest pathogens • neutralise toxin(s)/make toxins harmless
(iii)	bonding /AW, with mother; it's free/'cheap'; sterile/no risk of infection; body temperature; no preparation/easily available; provides, best/complete/most suitable/balanced /AW, nutrients/food; composition/quantity, of breast milk changes to match development; easier to digest/reduced risk of colic; reduce risk of allergies; contraceptive effect; AVP;	max 4	AVPs: no additives protects against, <u>breast</u> cancer/ <u>ovarian</u> cancer children less likely to develop diabetes helps the mother's body to return to 'normal', e.g. weight loss/restores uterus
		[Total: 14]	