

Question	Expected Answers	Marks	Additional Guidance
1 (a)	Function	structure	
	stores urine	A	
	produces gametes	F ;	
	produce seminal fluid	B / C ;	
	move gametes by peristalsis	D / J ;	
	produce testosterone	F ;	
		[4]	
(b) 1	flagellum / tail ;	[max 4]	
2	motile ;		
3	smaller / ref to actual sizes ;		
4	acrosome ;		
5	no food store ;		
6	less cytoplasm ;		
7	produced in larger numbers ;		
8	contains X <u>or</u> Y (chromosome) ;		
(c) (i) 1	(Fertility drugs may contain) FSH / LH ;	[max 3]	
2	taken / injected, during early stage of menstrual cycle ;		
3	stimulates ovaries ;		
4	(FSH) stimulates <u>follicles</u> to develop ;		
5	(LH / FSH) stimulates ovulation ;		
(ii) 1	collect sperm from male / donor ;	[max 2]	Accept through cervix
2	inject into uterus ;		
3	when egg likely to be in oviduct ;		
		[Total: 13]	

2 (a)	$\frac{34/35/36\text{mm}}{0.14}$ <p>answer = (x) 243 to 257 ;;</p>	[2]	
(b)	<p>no, flagellum / tail ; no, acrosome / (digestive) enzymes ; has, food / energy, store ; more cytoplasm ; larger nucleus ; more membrane / larger surface area ;</p>	[max 3]	<i>only accept structural points</i>
(c)	<p>reduces / halves, number of chromosomes ; so number of chromosomes does not double each generation ; gives variation ;</p>	[max 2]	

(d)	<p><i>man</i> cannot produce sperm ; sperm cannot swim / defective sperm / AW ; few sperm / low sperm count ; blockage of, epididymis / vas deferens ; result of, STD / named STD ; AVP ; had a vasectomy / problem with ejaculation / not enough nutrient in semen</p>	[max 1]	
	<p><i>woman</i> low concentration of / no, FSH ; follicles do not develop / cannot ovulate ; damaged / blocked / cut, oviduct ; AVP ; e.g. post menopause / embryo cannot implant / uterine lining does not thicken</p>	[max 1]	
(e)	<p>to increase chances of fertilisation ; fertilisation occurs in the oviduct ; sperm can only survive for a few days (in the oviduct) ; placed in the uterus and not in the vagina as sperm less likely to die / AW ; AVP ; e.g. ref to female's immune system takes 1–2 days for sperm to reach, egg / oviduct</p>	[max 3]	
(f)	<p>to maintain, endometrium / lining of uterus ; for implantation ; prevent loss of embryo (through menstruation) ; inhibits, secretion / release, of FSH / LH ; no development of (more) follicles / AW ;</p>	[max 3]	
(g)	<p>number of women who become pregnant out of all women who have AI ; as a percentage / out of every 100 ;</p>	[2]	
[Total: 17]			

Question	E	Answers	Marks	Additional Guidance
3	(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

3	(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	Mark	Additional Guidance
4 (a)	<p>1 (amniotic) sac, contains / secretes, the amniotic fluid ;</p> <p>2 sac, prevents entry of pathogens (from vagina) ; A 'disease'</p> <p><i>amniotic fluid or amniotic sac</i></p> <p>3 supports fetus ;</p> <p>4 protects / cushions, against, damage / sudden movements / bumps / AW ;</p> <p>5 provides constant temperature / protects against fluctuating temperature ;</p> <p>6 allows fetus to move ;</p> <p>7 needed for, bone / muscle, growth / development ;</p> <p>8 helps, lungs / gut, develop ;</p> <p>9 collects fetal, urine / waste / excretion(s) ;</p> <p>10 provides sterile environment / AW ;</p>	[max 4]	<p>A holds</p> <p>A 'the baby'</p> <p>A 'shock absorber'</p> <p>ignore pH, A 'keeps the fetus warm'</p> <p>A correct / suitable, temperature</p> <p>ignore egest</p>
(b)	<p><i>functions of the placenta – one mark per line</i></p> <p>1 ref to barrier between blood systems / prevention of maternal and fetal blood mixing ;</p> <p>2 <i>idea that</i> protection against mother's immune system ;</p> <p>3 supply of oxygen (to fetus) ;</p> <p>4 loss of carbon dioxide (from fetus) ;</p> <p>5 loss of, urea / waste ; R urine</p> <p>6 protection against, pathogen(s) / named pathogen(s) ; A disease</p> <p>7 transfer of antibodies (from mother) ;</p> <p>8 supply of, nutrients / named nutrient(s) ; ignore 'food'</p> <p>9 supply / removes, water ;</p> <p>10 secretes, hormone(s) / named hormone(s) ;</p>	[max 3]	<p>award one mark for idea of exchange if no ref. to any substance</p> <p>R breathing</p> <p>progesterone / oestrogen / HCG</p>
(c)	<p>A – dilates / widens / expands / stretches ;</p> <p>B – contracts ;</p>	[2]	ignore 'relaxes' / 'opens'

Question	E answers	Mark	Additional Guidance
4 (d)	<p><i>advantages to max 3</i></p> <p>provides, best / complete / most suitable / AW, food ; easy to digest ; no additives ; contains antibodies / ref. to colostrums / provides passive immunity ; provides protection against, pathogens / diseases / microorganisms ; further detail, e.g. diseases that the mother has had / common diseases ; sterile / no risk of infection from, formula milk / bottled milk ; is at, body / correct, temperature ; no preparation / always available ; bonding with mother ; it's free / 'cheap' ; reduce risk of allergies ; protects against, breast cancer / ovarian cancer ; helps the body to return to 'normal' ; e.g. weight loss / restores uterus contraceptive effect ;</p> <p><i>possible disadvantages to max 3</i></p> <p>transfer of, viruses / HIV / hepatitis B ; painful / sore nipples / mastitis ; stressful / may be embarrassing / AW ; mother may not be able to produce enough milk ; cannot see how much baby has consumed ; task cannot be shared with other parent ; medications / drugs / alcohol, can pass to baby ;</p> <p>AVP ;</p>	[max 4]	<p>A any suitable comment about nutrients A right composition for humans</p> <p>A temporary immunity / AW A named microorganism(s) R 'fights' disease</p> <p>A less likely to get diarrhoea</p>
[Total: 13]			