

# Reproduction

## Mark Scheme 6

<b>Level</b>	IGCSE
<b>Subject</b>	Biology
<b>Exam Board</b>	CIE
<b>Topic</b>	Reproduction
<b>Paper Type</b>	(Extended) Theory Paper
<b>Booklet</b>	Mark Scheme 6

**Time Allowed:** 66 minutes

**Score:** /55

**Percentage:** /100

Question	Expected Answers	Marks	Additional Guidance												
1 (a)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Function</td> <td style="width: 50%;">structure</td> </tr> <tr> <td>stores urine</td> <td style="text-align: center;"><b>A</b></td> </tr> <tr> <td>produces gametes</td> <td style="text-align: center;"><b>F ;</b></td> </tr> <tr> <td>produce seminal fluid</td> <td style="text-align: center;"><b>B / C ;</b></td> </tr> <tr> <td>move gametes by peristalsis</td> <td style="text-align: center;"><b>D / J ;</b></td> </tr> <tr> <td>produce testosterone</td> <td style="text-align: center;"><b>F ;</b></td> </tr> </table>	Function	structure	stores urine	<b>A</b>	produces gametes	<b>F ;</b>	produce seminal fluid	<b>B / C ;</b>	move gametes by peristalsis	<b>D / J ;</b>	produce testosterone	<b>F ;</b>	[4]	
Function	structure														
stores urine	<b>A</b>														
produces gametes	<b>F ;</b>														
produce seminal fluid	<b>B / C ;</b>														
move gametes by peristalsis	<b>D / J ;</b>														
produce testosterone	<b>F ;</b>														
(b) 1	1 flagellum / tail ; 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) ;	[max 4]													
(c) (i) 1	1 (Fertility drugs may contain) FSH / LH ; 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 ;	[max 3]													
(ii) 1	1 collect sperm from male / donor ; 2 inject into uterus ; 3 when egg likely to be in oviduct ;	[max 2]	<b>Accept</b> through cervix												
<b>[Total: 13]</b>															

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]	

<p><b>(d)</b></p>	<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> <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>	<p>[max 1]</p> <p>[max 1]</p>	
<p><b>(e)</b></p>	<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>	<p>[max 3]</p>	
<p><b>(f)</b></p>	<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>	<p>[max 3]</p>	
<p><b>(g)</b></p>	<p>number of women who become pregnant out of all women who have AI ; as a percentage / out of every 100 ;</p>	<p>[2]</p>	
<p style="text-align: right;"><b>[Total: 17]</b></p>			

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]	<b>ignore</b> produce  <b>accept</b> 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]	<b>accept</b> description of selection even if the term is not used
			[Total: 12]	

Question	Answers	Mark	Additional Guidance
4 (a) 1 2  3 4 5 6 7 8 9 10	(amniotic) sac, contains / secretes, the amniotic fluid ; sac, prevents entry of pathogens (from vagina) ; <b>A</b> 'disease'  <i>amniotic fluid or amniotic sac</i> 3 supports fetus ; 4 protects / cushions, against, damage / sudden movements / bumps / AW ; 5 provides constant temperature / protects against fluctuating temperature ; 6 allows fetus to move ; 7 needed for, bone / muscle, growth / development ; 8 helps, lungs / gut, develop ; 9 collects fetal, urine / waste / excretion(s) ; 10 provides sterile environment / AW ;	[max 4]	<b>A</b> holds  <b>A</b> 'the baby' <b>A</b> 'shock absorber' <b>ignore</b> pH, <b>A</b> 'keeps the fetus warm' <b>A</b> correct / suitable, temperature  <b>ignore</b> egest
(b)  1 2 3 4 5 6 7 8 9 10	<i>functions of the placenta – one mark per line</i>  1 ref to barrier between blood systems / prevention of maternal and fetal blood mixing ; 2 <i>idea that</i> protection against mother's immune system ; 3 supply of oxygen (to fetus) ; 4 loss of carbon dioxide (from fetus) ; 5 loss of, urea / waste ; <b>R</b> urine 6 protection against, pathogen(s) / named pathogen(s) ; <b>A</b> disease 7 transfer of antibodies (from mother) ; 8 supply of, nutrients / named nutrient(s) ; <b>ignore</b> 'food' 9 supply / removes, water ; 10 secretes, hormone(s) / named hormone(s) ;	[max 3]	award one mark for idea of exchange if no ref. to any substance <b>R</b> breathing  progesterone / oestrogen / HCG
(c)	<b>A</b> – dilates / widens / expands / stretches ; <b>B</b> – contracts ;	[2]	<b>ignore</b> '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><b>A</b> any suitable comment about nutrients  <b>A</b> right composition for humans</p> <p><b>A</b> temporary immunity / AW  <b>A</b> named microorganism(s) <b>R</b> 'fights'                      disease</p> <p><b>A</b> less likely to get diarrhoea</p>
<b>[Total: 13]</b>			