Reproduction Mark Scheme 7

Level	IGCSE
Subject	Biology
Exam Board	CIE
Торіс	Reproduction
Paper Type	(Extended) Theory Paper
Booklet	Mark Scheme 7

<u>CHEMISTRY ONLINE</u>

Time Allowed:	66 minutes
Score:	/55
Percentage:	/100

Question E Ans	wers		Marks	Additional Guidance
1 (a) NB: <u>one</u> mark f <u>one</u> mark f <u>one</u> mark f	(a) NB: <u>one</u> mark for <u>sites of production</u> <u>one</u> mark for <u>two</u> 2° sexual characteristics for <u>testosterone</u> <u>one</u> mark for <u>two</u> 2° sexual characteristics for <u>oestrogen</u>			
sex hormones	testosterone	oestrogen		
site of production	n testis / testes / testicles	follicle / ovary ;		
secondary sexu characteristics	al1any two•hair on face•body / pubic, hair•increase in muscles•growth of genitals2growth of vocal cord/ larynx / deep voice•broad shoulders;	<i>any two</i> • growth of breasts • body / pubic, hair • hips widen • fat deposition ; s	[3]	
(b) (i) pituitary (gland));		[1]	
(ii) ovary ;			[1]	
(c) (i) 1 increasing cond 2 (then) decrease 3 peak at, ovulati 4 decreases / low 5 (then) increase	centration, days 0 to 2 / 3 ; es until day 10 –13 ; on / middle of the cycle / day 14 ; / concentration from days 14 to 22 / s from day 23 / 24 ;	23 / 24 ;	[max 3]	 A ref. to levelling out 6 –10 / 11 as part of overall decrease MP2 MP3 need peak / max / highest / AW not just up / down
(c) (ii)1FSH stimulates2to grow ;3to secrete oestr4ref. to, develope5correct reference6low FSH after content	follicle (cells) ; rogen ; ment / maturation of egg ; ce to subsequent effect on, oestroge wulation, prevents further follicle stir	n / LH at ovulation ; nulation ;	[max 3]	
			otal: 11]	

Que	estion	E Answers		Marks	Additional Guidar	nce
2	(a)	Lilium ;		1		
	(b)	 A stigma ; B anther ; C petal ; D style ; 		4		
	(c)	parallel veins / AW ; narrow / AW, leaves ;			A non-branching ve A long and thin	eins / no mid-rib
		flower parts in, 3s / 6s ;		max 2	A for any named part of R one cotyledon	art
	(d)					
		one mark per box – ignore any neutra	neutral comments			
		type of reproduction in flowering plants	nts advantages			disadvantages
		asexual	only one, par fast ; (potential) ra less energy r needed ; if parent well adapted to su	ent / plar oid sprea equired / adapted, urroundin	it ; d ; no gametes offspring will be gs ; max 1	competition ; little / no, variation ; less evolution / less able to adapt to change ; may all be killed by same disease ; converse of MP5 for asexual ; max 1
		sexual	variation :			may need two plants / pollinating agent:
		СНЕ	evolution / for (seed) disper colonization /	rmation o sal ; able to a	f new species ; adapt to change ;	slow ; much pollen / many seeds wasted ; fertilization may not happen; loss of lots of energy ;
					max 1	max 1
					ON -	
			[Total: 11]			

Question		E Answers		Marks	Additional Guidance	
3	(a)	1 2 3	root hairs ; water moves from high(er) <u>water potential</u> to low(er) <u>water potential</u> ; osmosis ;		A down a water potential gradient <i>ignore</i> water concentration R dilute and concentrated	
		4 5	through partially permeable <u>membrane</u> ; ref. to protein pores ;	[max 3]	A semi-permeable / selectively permeable	
	(b)	1 2 3 4 5 6	large surface area ; thin (cell) walls ; (many) mitochondria ; ref. respiration ; provide / release, energy, for active transport ; proteins / carriers / channels, for, diffusion / active transport (of ions) ;	[max 3]	 A minerals for ions A thin wall as 'cell' is in the question A active, uptake / transport, uses energy A active uptake R if water also taken up by active uptake A 'moving against concentration gradient' for active transport 	
	(c)	in a adı ovı	appropriate boxes ult and zygote = 90 ; um = 45 ;	[2]	A ecf if half incorrect diploid number only allow ecf if both diploid numbers are the same	

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2	(d)	advantages for plants		R refs to number of plants produced
3		only one, parent / plant ;		R 'does not require male and female gametes'
		fast / new plants establish themselves quickly;		A 'more likely to leave offspring' idea
		(potential) rapid spread close to parent / AW;		
		less energy required ;		ignore refs to avoiding mutations unqualified
		no wastage of gametes ;		
		(if parent well adapted) offspring will be adapted to		A 'good' traits / e.g., passed on R 'good' genes
		surroundings ;		
		plants grow in a suitable place / no wastage ;		
		AVP ; e.g. greater chance of reproduction	[max 2]	do not accept advantages for humans
		disadvantage for plants		
		plants too crowded / overcrowding ;		
		(lots of) competition for resources ;		
		little / no, (genetic) variation ;		
		disease transmitted directly to offspring ;		genetic or infectious disease
		less evolution / less able to adapt ;		
		(all identical so) can be wiped out by the same disease;		A 'disease can spread easily'
		no / little, dispersal ;		
		AVP;	[max 1]	
		[Tot	al: 11]	

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Question		E Answers	Marks	Additional Guidance			
4	(a)	 A protein ; B RNA / nucleic acid ; 		A capsid / protein coat R membrane R capsule, slime coa A DNA			
	(b)	lymphocytes stop making antibodies ;		A lymphocytes normally make antibodies			
		<i>ref to</i> antibodies stop, bacteria / viruses, spreading / AW ; help <u>phagocytes</u> , ingest / AW, bacteria / AW ; lymphocytes kill infected cells ; AVP ; e.g. another function of antibodies	[max 3]	 A in context of lymphocytes and antibodies NOT doing their normal functions A pathogens for bacteria R 'fight diseases' e.g. clumping bacteria / attaching to antigens 			
(c)		(unprotected / AW) sexual intercourse ; across placenta ; at birth ; in breast milk ; sharing, needles / syringes ; in blood products / blood for transfusion / transplants / blood to blood contact ;		R saliva R other sharps, e.g. razors unless qualified by blood contact R using contaminated / dirty / used, needles unqualified R donating blood			
(d)		use of, condoms / femidoms ; provide education / suitable example ; publicity campaigns ; needle exchange schemes for drug addicts ; sterilisation of needles / safe disposal / no reuse ; screening blood / blood donors ; AVP ; e.g. HIV+ mothers should bottle feed, limit number sexual partners [max		R not sharing needles unqualified			
		[Tot	al: 11])N			

Quest	ion	n Expected Answers			Marks	Guidance
₅ (a)) (i)	ovulation ;			[1]	
	(ii)	 one set of <u>chromosomes</u> / one of each pair of <u>chromosomes</u>; half the number of <u>chromosomes</u> of, (named) body / normal / diploid, cell; 			R 'half' unqualified IGNORE refs to DNA / genes	
		(refers to) product of me	eiosis ;		[max 1]	IGNORE n rather than 2n
(b))		1			
		feature	egg cell	sperm cell		one mark per row
		site of production	<u>ovary</u> / <u>ovaries</u> / <u>follicle(s)</u>	<u>testis</u> / <u>testes</u> / <u>seminiferous tubules</u> ;		IGNORE epididymis if testis also give
		relative size	large(r) , ~100 μm	small(er) ; 40–60 μm		
		numbers produced	one per month / few / AW	many / AW, all the time ;		R scale bar length (10 μ m) for sperm
		mobility	needs to be moved or moved by, cilia / peristalsis (of oviduct)	uses, tail / flagellum <i>or</i> can swim <i>or</i> description of action of tail	Y	ACCEPT hundreds for egg cell and millions for sperm (if lifetime production) A one at a time for number of eggs
			A not mobile	(highly) mobile / can move ;	[4]	
(c)) (i)	ovary / ovaries / follicle	(s); R corpus luteum	n / placenta	[1]	
	(ii)	 ii) 1 (stimulates / causes) repair of the, uterus lining / endometrium ; 2 (stimulates / causes) growth / thickening, of uterus lining / endometrium ; 3 ready for, implantation / receive 'egg' or embryo ; 4 inhibits (release of) FSH ; 5 stops, production / release, of more eggs ; 6 stimulates release of LH ; 			A womb for uterus 1/2 A ref. to glands / blood vessels in uterus as equivalent to lining 2 A builds up / rebuilds for one mark only R wall if given <i>for</i> lining B (make / create lining)	
		/ (stimulates / cause	s) change in cervical m	iucus ;	[max 2]	K make / create, lining

Question	Expected Answers	Marks	Guidance
₅ (d)	if in vitro fertilisation is described mark to max 1		
	 semen / sperm, is collected from, male / donor / sperm bank ; even if IVF described inserted into, vagina / cervix / uterus / womb / oviduct ; near time of ovulation / at fertile time ; 	[max 2]	R a / single / one, sperm
		[Total: 11]	

