

# Reproduction

## Mark Scheme 2

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

CHEMISTRY ONLINE

Time Allowed: 54 minutes

Score: /45

Percentage: /100

Question	E	Answers	Marks	Additional Guidance
<sup>1</sup> (a) (i)	R	corpus luteum / yellow body ; S – (Graafian) follicle ;	[2]	
(ii)		ovulation ;	[1]	
(b) (i)	(o)	estrogen ;	[1]	
(ii)		progesterone ;	[1]	
(c) (i)	1 2 3 4 5 6 7 8	flagellum / tail / streamlined ; motile / swim / AW ; smaller / reference to actual sizes ; acrosome / enzymes in packet on head ; no food store ; less cytoplasm ; contains X or Y (chromosome) ; AVP ;	[max 3]	A contains Y chromosome
(ii)		haploid ;	[1]	
(iii)		oviduct ;	[1]	A fallopian tube
(iv)	1 2 3 4 5 6 7 8 9	(acrosome) enzymes break down, jelly layer / AW ; sperm, head / nucleus, enters egg ; fertilisation membrane forms / no more sperm can enter ; (haploid) nuclei, fuse / join ; (diploid) zygote formed ; mitosis / cell division ; (2 / more – celled) embryo forms ; (hollow) ball of cells / embryo / zygote / fertilised egg, moves down the oviduct ; ciliary movement / peristalsis, in the oviduct ;	[max 4]	

Question	E	Answers	Marks	Additional Guidance
1 (d) (i)	1 2 3 4	no / slight, change, at first / AW ; then exponential / AW, increase ; then levels off / peaks (after 1992) ; comparative use of figures with correct units stated at least once ;	[max 2]	
(d) (ii)	1 2 3 4	provide (named) fertility drug early in menstrual cycle ; e.g. when follicle(s) are developing / 14 days before AI collect, sperm / semen (from male) ; place, semen / sperm, into uterus / vagina / through cervix ; around the time of ovulation ;	[max 3]	
		<b>Total:</b>	<b>[19]</b>	

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2 (a)	<p><i>method of pollination:</i> wind ;</p> <p><i>explanation to max 2:</i> Feathery / AW, stigma ; long, filament ; large, anthers / stamens ; anthers / stamens, hang outside flower ; anthers loosely attached (to filament) ; light pollen ; no petals ;</p>	[1] +  max [3]	<b>A</b> 'only bracts'
(b)	cross (pollination) ;	[1]	
(c)	pollen tube ; delivers male gamete / pollen <u>nucleus</u> / male <u>nucleus</u> to ovule ; AW	[2]	<b>A</b> female gamete / egg / female nucleus / ovum.
(d)	<i>idea that</i> tip of pollen tube opens / AW ; gametes / sex cells / ova and pollen <u>nuclei</u> fuse / join / combine ; formation of zygote ; diploid ;	max [2]	<b>A</b> male nucleus for pollen nucleus <b>ignore</b> pollen unqualified <b>ignore</b> meet / mix
(e) (i)	ovule ;	[1]	
(ii)	ovary (wall) ;	[1]	
(iii)	colonise new areas ; reduce (intraspecific) competition ; reduce inbreeding ; <b>ora</b>	max [1]	
(f)	stored food / food reserves (in seed) broken down ; named enzyme plus substrate ; product plus use ; enzymes required in process of respiration ;	max [2]	
		<b>[Total:13]</b>	

Question		Mark	Additional Guidance
3 (a) (i)	<i>glucose</i> provides energy/required for (aerobic/anaerobic) respiration ; <i>amino acids</i> used, to make (named), proteins/polypeptides ;	[2]	<b>R</b> to produce / AW, energy <b>A</b> for (cell) growth / make new cytoplasm
(ii)	DNA / chromosome / genetic material, replicates / is copied ; cell membrane / cell wall, develops in the middle of the cell ; binary fission ; bacteria / cell / cytoplasm, divides into two ;	max [2]	<b>ignore</b> mitosis / RNA / chromosomes
(b)	some bacteria were resistant to antibiotic, <b>S</b> / <b>T</b> / both <b>S</b> and <b>T</b> ; fewer were resistant to antibiotic <b>T</b> / antibiotic <b>T</b> is more effective (than <b>S</b> ) ; both antibiotics, killed / inhibited growth or reproduction of, (susceptible) bacteria ;	max [2]	<b>R</b> immune / antibodies
(c)	bacteria are resistant ; have reproduced / multiplied, (in culture) ; all genetically identical, so all resistant ;	max [2]	<b>R</b> 'growing / becoming, resistant'

Question		Mark	Additional Guidance
3 (d)	<p><i>antibiotic resistant bacteria are formed by</i>  mutation ;  change to, DNA / gene ;  produces, new / different, protein ;  ref to anything that increases risk of resistance ;</p> <p><i>spread</i>  (when antibiotic is used) susceptible / AW, bacteria die ; <b>ORA</b>  less competition / example ;</p> <p>ref to fewer limiting factor(s) ;  resistant bacteria, reproduce / multiply ; pass on their  (DNA / gene(s) / allele(s)) for (antibiotic) resistance ;  ref to, (unprotected) sexual intercourse / many sex partners / AW ;  any two methods of transmission (from host to host) ;;</p> <p>AVP ;</p>	max [5]	<p>e.g. not completing the full course / do  or taking antibiotics when not necessary</p> <p>e.g. more food / resources (available for  resistant bacteria)</p> <p>e.g. body fluids / droplets (in  air) / blood / needles <i>or</i>  syringes / food / water / (named)  vector / across placenta / at birth / breast milk</p>
		<b>[Total: 13]</b>	