Reproduction

Mark Scheme 2

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

Time Allowed: **54 minutes**

Score: **/45**

Percentage: **/100**

Question	E	Answers	Marks	Additional Guidance
1 (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]	
		Total:	**[19]**	

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

Question		Mark	Additional Guidance
3 (a) (i)	*glucose* provides energy / required for (aerobic / anaerobic) respiration ; *amino acids* used, to make (named), proteins / polypeptides ;	[2]	**R** to produce / AW, energy **A** 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]	**ignore** mitosis / RNA /chromosomes
(b)	some bacteria were resistant to antibiotic, **S** / **T** / both **S** and **T** ; fewer were resistant to antibiotic **T** / antibiotic **T** is more effective (than **S**) ; both antibiotics, killed / inhibited growth or reproduction of, (susceptible) bacteria ;	max [2]	**R** immune / antibodies
(c)	bacteria are resistant ; have reproduced / multiplied, (in culture) ; all genetically identical, so all resistant ;	max [2]	**R** 'growing / becoming, resistant'

Question		Mark	Additional Guidance
3 (d)	*antibiotic resistant bacteria are formed by* mutation ; change to, DNA / gene ; produces, new / different, protein ; ref to anything that increases risk of resistance ; *spread* (when antibiotic is used) susceptible / AW, bacteria die ; **ORA** less competition / example ; 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) ;; AVP ;	max [5]	e.g. not completing the full course /do or taking antibiotics when not necessary e.g. more food / resources (available for resistant bacteria) e.g. body fluids / droplets (in air) / blood / needles *or* syringes / food / water / (named) vector / across placenta / at birth / breast milk
		[Total: 13]	