

Reproduction 4 MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	DNA replication / copies of genetic material were made	'it' = a chromosome allow chromosomes replicate / duplicate / are copied ignore chromosomes divide / split / double	1
a)ii)	one copy of each (chromosome / chromatid / strand) to each offspring cell each offspring cell receives a complete set of / the same genetic material	ignore ref. to gametes and fertilisation allow 'so offspring (cells) are identical'	1 1
b)i)	meiosis	allow meiosis as the only alternative spelling	1
b)ii)	Species A = 4 and Species B = 8		1
b)iii)	sum of A + B from (b)(ii) e.g. 12		
c)i)	similarities between chromosomes or similarities between flowers described can breed / can sexually reproduce	e.g. shape of petals / pattern on petals / colour / stamens allow can reproduce with each other / they can produce offspring	1 1
c)ii)	any two from: • offspring contain 3 copies of each gene / of each chromosome / odd number of each of the chromosomes • some chromosomes unable to pair (in meiosis) • (viable) gametes not formed / some gametes with extra / too many genes / chromosomes or some gametes with missing genes / chromosomes		2
Total marks			10

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS												
a)i)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Feature</th> <th>Mitosis only</th> <th>Meiosis only</th> </tr> </thead> <tbody> <tr> <td>Produces new cells during growth and repair</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>Produces gametes (sex cells)</td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Produces genetically identical cells</td> <td style="text-align: center;">✓</td> <td></td> </tr> </tbody> </table> <p>All 3 correct = 2 marks 2 correct = 1 mark 0 or 1 correct = 0 marks</p>	Feature	Mitosis only	Meiosis only	Produces new cells during growth and repair	✓		Produces gametes (sex cells)		✓	Produces genetically identical cells	✓			2
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Produces new cells during growth and repair	✓														
Produces gametes (sex cells)		✓													
Produces genetically identical cells	✓														
a)ii)	(a man) testis / testes (a woman) ovary / ovaries	accept testicle(s) do not accept 'ova' / ovule	1 1												
b)i)	XY / YX or X and Y		1												
b)ii)	XX or X and X or 2 X's	accept X	1												
c)	$\frac{1}{2}$ / 0.5 / 50% / 1:1 / 1 in 2	do not accept 1:2 / 50/50 allow 50:50 allow 2 in 4	1												
Total marks			6												

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	fertilisation		1
a)ii)	in sequence: 1 gene 2 chromosome 3 nucleus	accept 1 next to gene, 2 next to chromosome and 3 next to nucleus in box allow 1 mark for smallest or largest in correct position	2
a)iii)	DNA		1
b)i)	On diagram: tick drawn next to X and / or Y from Parent 1	tick(s) must be totally outside grid squares allow ticks around "parent 1" extra ticks elsewhere cancel	1
b)ii)	0.5 / $\frac{1}{2}$ / 50% / 1:1 / 50:50 / 1 in 2 2 (out of 4) boxes are XX or half of the sperm contain an X-chromosome	allow 2/4 / 2 in 4 / 2 out of 4 / 'even(s)' / 'fifty – fifty' do not allow 1:2 or '50 / 50' or '50 – 50' allow XY is male and 2 (out of 4) boxes are XY	1 1
Total marks			7

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	in the chromosome(s) in the nucleus	ignore genes / alleles allow nuclei allow mitochondria	1 1
a)ii)	the DNA / chromosomes / genes are replicated / copied / multiplied / doubled / duplicated	allow DNA is cloned ignore same DNA / chromosomes / genes if unqualified	1
b)i)	1 / one		1
b)ii)	2 / two		1
c)	B		1
Total marks			6