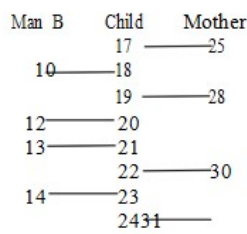


Reproduction 3 MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any two from: ✗ to combine / use amino acids ✗ in specific / particular / correct /right order ✗ to manufacture protein / enzymes/ hormones	do not allow to make amino acids allow examples of proteins / enzymes / hormones	2
b)i)	(man) B any three from: • child gets DNA / bars / lines from mother and father / parents • (child has) mother's 25 / 28 / 30 / 31 or child gets 17 / 19 / 22 / 24 from mother • (child has) man B's 10 / 12 / 13 / 14 or child gets 18 / 20 / 21 / 23 from B • no bars / DNA / lines from man A correspond to child	no mark for this but max 2 marks if A given ignore genes / chromosomes  contradictions disqualify 2nd and / or 3rd marking points ignore genes / chromosomes	3
b)ii)	any two from: ✗ gametes / eggs / sperm ✗ contain only half of (mother's / father's) DNA / chromosomes / genes / genetic information ✗ due to meiosis		2
Total marks			7

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	chromosomes		1
b)	diagram showing four separate chromosomes two long and two short (as in diagram 1)	allow each chromosome shown as two joined chromatids do not allow if chromosomes touching each other	1
c)i)	any two from: ✗ can grow into any type of tissue /named tissue ✗ used in medical research ✗ used to treat human diseases ✗ large numbers can be grown		2
c)ii)	any two from: ✗ expensive ✗ grow out of control / ref cancers ✗ may be rejected ✗ need for drugs (for rest of life)		2
Total marks			6

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any one from ⊖ chromosomes in pairs ⊖ inherited one of each pair from each parent ⊖ one of each pair in egg and one of each pair in sperm ⊖ so sex cells / gametes can have half the number	allow need to pair during cell division / meiosis	2
b)	any two from: ⊖ code ⊖ combination / sequence of amino acids ⊖ forming specific / particular proteins / examples	If no other mark gained allow reference to controlling characteristics / appearance for 1 mark	2
c)i)	C		1
c)ii)	30		1
d)i)	for growth / repair / replacement /asexual reproduction	do not accept incorrect qualification, eg growth of cells or repair of cells they equals cells therefore do not accept they grow etc	1
d)ii)	44 or 22 pairs		1

Total marks			7
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QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	23		1
a)ii)	nucleus / 'the head'	allow phonetic spelling	1
b)i)	X and X		1
b)ii)	X and Y		1
c)	150 million / 150,000,000 / half (of them) / 50% / 1in 2		1
Total marks			5

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	mitosis	correct spelling only	1
a)ii)	replicates / doubles / is copied / duplicates	accept cloned ignore multiplied / reproduced	1
b)i)	fertilisation occurs / fusion (of gametes) so leading to mixing of genetic information / genes / DNA / chromosomes one copy (of each allele / gene / chromosome) from each parent or gametes produced by meiosis or meiosis causes variation	accept converse for asexual, eg none in asexual / just division in asexual genes / DNA / chromosomes / genetic information comes from 1 parent in asexual ignore characteristics meiosis must be spelt correctly	1 1 1
Total marks			5