



GCSE Biology

Reproduction

Mark Scheme

Time available: 50 minutes

Marks available: 44 marks

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Mark schemes

1.

(a) 46

1

(b) 23

allow ecf from 2.1 – ie half of answer given in 2.1

1

(c) egg

1

sperm

1

ovary

1

meiosis

1

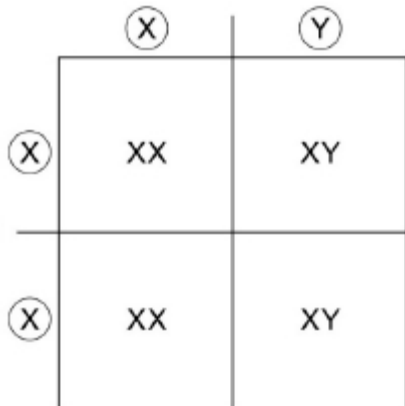
fertilisation

1

correct order only

correct spelling only

(d)



all 4 correct = 2 marks

2 or 3 correct = 1 mark

0 or 1 correct = 0 marks

ignore correct / incorrect identification of male and female offspring

2

(e) 1 in 2

1

(f) any **two** from:

- multiple genes determine appearance
allow several / many genes determine appearance
- different combinations of alleles
allow description of combinations of alleles' allow genes for alleles
- different environmental effects
allow example e.g. eat different diets
- from different egg / sperm

2

[12]

2.

(a)

	statement is true for		
	mitosis only	meiosis only	both mitosis and meiosis
all cells produced are genetically identical	✓		
in humans, at the end of cell division each cell contains 23 chromosomes		✓	
involves DNA replication			✓

3 correct = 2 marks
 2 correct = 1 mark
 0 or 1 correct = 0 marks

2

(b) any **two** from:

ignore references to one parent only

- many offspring produced
- takes less time
allow asexual is faster
- (more) energy efficient
- genetically identical offspring
allow offspring are clones
- successful traits propagated / maintained / passed on (due to offspring being genetically identical)
- no transfer of gametes or seed dispersal
allow no vulnerable embryo stage
allow no need for animals
- not wasteful of flowers / pollen / seeds
- colonisation of local area
must imply local area

2

(c) genetic variation (in offspring)

1

(so) better adapted survive

allow reference to natural selection or survival of the fittest

1

(and) colonise new areas by seed dispersal

or

can escape adverse event in original area (by living in new area)

must imply new area

1

many offspring **so** higher probability some will survive

1

allow bluebell example described (max 3 if not bluebell)

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3.

(a) (i) meiosis

allow mieosis

1

(ii) testis / testes

allow testicle

1

(b) (i) 23

1

- (ii) fuses / joins with cell D / with egg cell **or** used in fertilisation
allow fuse with another cell

1

prevents doubling of chromosome number / restores original no. / 46 / diploid
no. / normal no. / full no.

accept 23 from each parent / from each gamete

1

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4.

- (a) (i) mitosis

correct spelling only

1

- (ii) replicates / doubles / is copied / duplicates

accept cloned

ignore multiplied / reproduced

1

- (b) fertilisation occurs / fusion (of gametes)

accept converse for asexual, eg none in asexual / just division in asexual

1

so leading to mixing of genetic information / genes / DNA / chromosomes

genes / DNA / chromosomes / genetic information comes from 1 parent in asexual

ignore characteristics

1

one copy (of each allele / gene / chromosome) from each parent

or

gametes produced by meiosis

or

meiosis causes variation

meiosis must be spelt correctly

1

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5.

- (a) seeds produced by sexual reproduction / fusion of gametes / fertilisation

allow produced by pollination / crossing

1

mixture of genes / genetic information / chromosomes / DNA

or from two parents / apple trees

if no other mark obtained allow 1 mark for apples had different genes / genetic information / chromosomes / DNA

or

mutation occurred

ignore environmental effects / cloned

1

- (b) (i) cuttings / tissue culture
accept grafting
allow adult cell cloning
ignore cloning unqualified
ignore genetic engineering
ignore asexual reproduction

1

- (ii) asexual reproduction
allow produced by cloning / mitosis

1

have identical genes / genetic information / chromosomes / DNA

or no mixing of genes / genetic information / chromosomes / DNA

1

[5]

6.

- (a) any **two** from:

assume it refers to asexual

- no fusion in asexual **or** sexual involves fusion
accept no fertilisation in asexual or fertilisation in sexual

- or** no mixing of genetic information in asexual **or** mixing of genetic information in sexual
accept genes / alleles / chromosomes / genetics for genetic information

- or** asexual involves splitting (of one individual)

- no gametes in asexual **or** sexual involves gametes
accept named gametes

- only one parent in asexual **or** sexual involves two parents

- no variation in asexual
or asexual produces clones
or sexual leads to variations
allow offspring of sexual have characteristics of both parents for this point
ignore sexual intercourse
ignore external / internal
ignore plants / animals
ignore mitosis / meiosis

2

- (b) nucleus of egg removed **or**
involves empty egg cell

1

so only one nucleus **or** one set of genetic information / genes / chromosomes
or
so genetic information / genes / chromosomes from one parent only

1

[4]

7.

- (a) characteristics

1

- (b) genes

1

- (c) chromosomes

1

- (d) mitosis

1

- (e) asexual

1

[5]