

# MARK SCHEME

# GCSE

## BIOLOGY

## AQA - TRIPLE SCIENCE

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B 6 - TEST 1

GENETICS

Beginner

## Mark schemes

**1.**

(a) Gregor Mendel

1

(b) DNA

1

(c) when the dominant allele is not present

1

(d) tt

*allow homozygous recessive*

1

(e)

	T	t
T	TT	Tt
t	Tt	tt

*all 3 correct = 2 marks*

*2 correct = 1 mark*

*0 or 1 correct = 0 marks*

*allow tT for Tt*

2

(f) circle drawn around either TT or tt on Figure 2

*allow circles drawn round both*

1

(g) correct ratio from part (e) e.g. 3 : 1

*allow multiples of stated ratio*

*allow 3 : 1 if no answer to part (e)*

1

**[8]**

**2.**

(a) 46

1

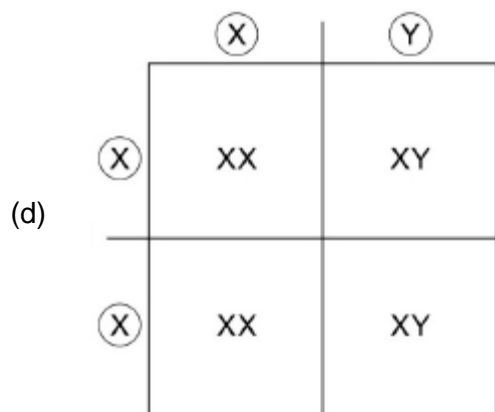
(b) 23

*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*



*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*

- (e) 1 in 2 2
- (f) any **two** from: 1

- 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]**

- 3.** (a) selection 1
- (b) (i) 4 1
- (ii) ground finch / lives on the ground 1
- (only) eats seeds  
*allow eg eats seeds on / from the ground for 2 marks* 1
- (c) Lamarck 1
- [5]**

- 4.** (a) (i) any **two** from: 2
- trapped / held (since sticky)
  - engulfed / covered by resin  
*allow engulfed / covered by amber*
  - prevented decay.
- (ii) any **two** from: 2
- animal / plant (dies and) body covered in sediment / mud  
*ignore ref to rock*  
*allow covered in tar / ice*
  - bones / shells / hard parts do not decay
  - minerals enter bones / parts are replaced by other materials / mineralisation
  - preserved traces / footprints / burrows / rootlet traces / impressions / casts.

(b) (i) New technology provides more valid evidence.

1

(ii) any **three** from:

examples of physical factors, e.g.

*accept 3 physical factors or 3 biological factors or some of each for full marks*

- flooding
- drought
- ice age / temperature change.

*ignore pollution*

examples of biological factors, e.g.

- (new) predators (allow hunters)
- (new) disease / named pathogen
- competition for food
- competition for mates

*competition must be qualified*

- cyclical nature of speciation
- isolation
- lack of habitat or habitat change.

**if no other answers given allow** natural disaster / weather change / catastrophic event / environmental change / climate change for **1** mark

3

[8]

5.

(a) When the dominant allele is not present.

1

(b) (i) Bb

1

(ii)

		Woman Brown hair	
		B	b
Person 3 Red hair	b		bb
	b	Bb	bb

3 correct = 2 marks

2 correct = 1 mark

1 or 0 correct = 0 marks

allow bB for Bb

2

(iii) 1 in 2  
*allow ecf from part ii*

1  
[5]

**6.** (a) one from each parent / one from egg and one from sperm  
*do not accept egg and sperm join / fertilisation unqualified*

1

(b) (i) nn  
*accept a ring around printed nn*

1

(ii) Nn Nn

1

[3]

**7.** (a) Taking cuttings from plants

1

(b) (i) Adult cell cloning

1

(ii) an egg cell

1

(iii) nucleus

1

(iv) an electric shock

1

(v) uterus / womb  
*accept phonetic spelling*

1

- (c) any **two** from:
- unethical / immoral  
*allow 'rights' of the cloned child*  
*allow against religious teachings*
  - cloned child would have to give up a kidney
  - possible operation complications.  
*allow illegal*  
*allow parents may not want another child*  
*allow a long time to wait (for the kidney)*

2

[8]

**8.** (a) Mendel

1

(b) (i) TT

1

(ii) a dominant allele

1

(c) 1 : 1

1

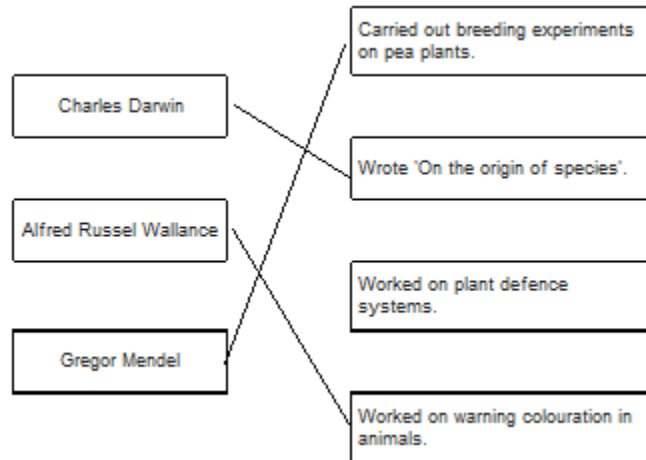
(d) 100 short plants

1

[5]

9.

(a)



3

(b) a gene

*allow allele*

1

(c) 4

1

(d) correct derivation of children's genotypes

1

identification of children with cystic fibrosis (dd)

1

0.25

*allow ecf*

*allow ¼ / 25% / 1 in 4 / 1:3*

1

*do not accept 1:4*

(e) heterozygous

1

[9]

10.

(a) three billion

1

(b) mutation(s)

1

breed / reproduce

*in this order only*

*allow pass on their genes*

1

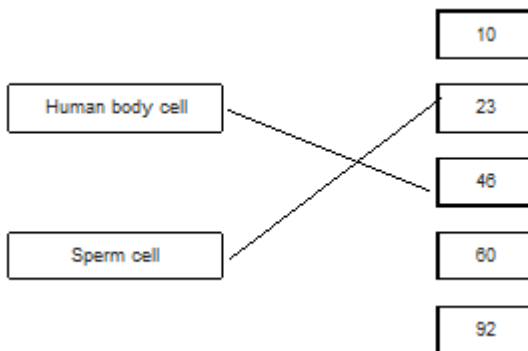
[3]

11.

(a) A

1

(b)



2

(c) one x circled under mother

*accept if clearly indicated choice even if not circled*

1

(d) XY

*allow YX*

1

(e) 50 (%)

1

[6]