

MARK SCHEME

GCSE

BIOLOGY

AQA - COMBINED SCIENCE

B 6 - TEST 1

INHERITANCE, VARIATION AND EVOLUTION

Beginner

Mark schemes

1.

variation

must be in correct order

1

natural selection

1

(sexual) reproduction

1

[3]

2.

(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]

3.

(a) mud

1

decayed

1

skeleton

1

rock

1

(b) idea that living things have changed (over time)

do **not** allow 'dating'
do **not** credit 'evolved'
allow 'compare the skeleton'

1

[5]

4.

(a) A – nucleus

1

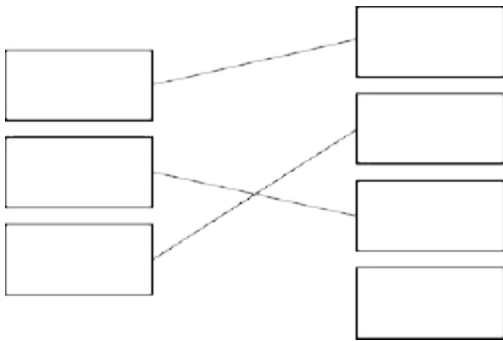
B – chromosome

1

C – gene

1

(b)



extra line from statement cancels the mark

3

[6]

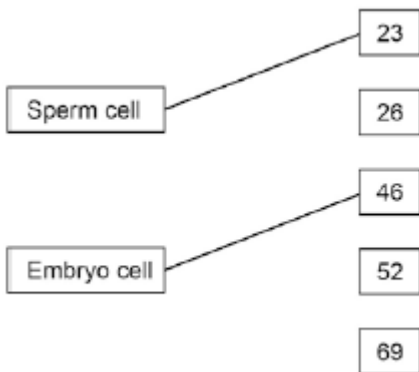
5.

(a) Nucleus

1

(b) **Type of cell**

Number of chromosomes



extra lines from left cancel the mark

2

(c)

	X	X
X	XX	XX
Y	XY	XY

*all three correct for 2 marks
one or two correct for 1 mark
allow XY or YX in correct places*

2

(d)

	X	X
X	XX	XX
Y	XY	XY

either circled

1

(e) 1 in 2

1

[7]

6.

(a) X (no mark)

X is more visible or Y is more camouflaged

1

- (b) (i) so camouflage not changed **or** so not easier to see 1
- (ii) 25 1
- 7 1
- (iii) any **one** from:
- eaten (by birds) / died
 - mixed in with large number of unmarked moths
 - moved away 1
- (c) (i) DNA 1
- (ii) the gene / allele for being dark / dominant 1

[7]

- 7.** (a) between 200 and 500 million years ago 2
- (b) the organism was replaced by minerals 1
- (c) there are no organisms of that species alive today 1
- (d) DNA analysis 1
- (e) (Carl) Linnaeus 1
- (f) Protoceratops **and** Triceratops
allow
*Coronosaurus **and** Triceratops*
or
*Protoceratops **and** Coronosaurus*
or
*Marginocephalia **and** Pachycephalosaurus* 1
- (g) Marginocephalia 1
- (h) older fossils have a simpler structure 1

[8]

8.

(a)

	Genes	Environment	Both
Brown...	✓		
Light...			✓
Short...		✓	

1

1

1

(b) bb

1

(c) brown

allow light brown or dark brown

1

(d) (using bb for mother's gametes)

correct combination in all four boxes, e.g.

	(b)	(b)
(B)	Bb	Bb
(b)	bb	bb

allow any combination of mother's gametes as mark is for filling in boxes correctly

1

(e) 50%, 0.5, ½

the award of this mark is consequential to the answer in part (d)

ignore ratios

1

(f) phenotype

1

(g) almost certainly have no effect

1

[9]

9.

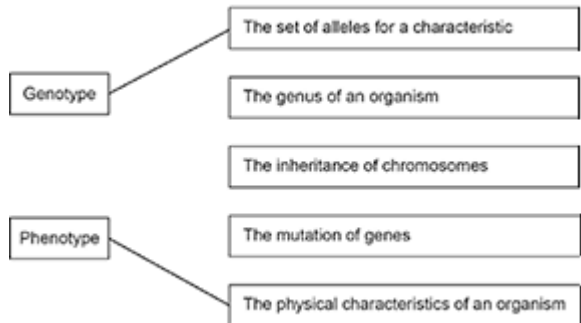
(a)

Characteristic	Environmental	Genetic	Both
Eye colour		✓	
A scar	✓		
Weight			✓

3

(b) **Key term**

Definition



extra lines from the left negate the mark

2

(c)

Stage in selective breeding	Order of stage
Cows are bred over many generations	4
Parents are bred together	2
Cows with the desired characteristics are chosen	1
Calves with the most desired characteristics are bred together	3

all 3 correct for 2 marks

1 or 2 correct for 1 mark

max. 2

(d) beef / meat

allow hardiness, disease resistance

1

milk yield

1

(e) higher veterinary costs

1

less income from sale of (milk and meat) products

1

[11]

10.

(a) asexual

1

clones

1

gametes

1

variation

1

mitosis

in this order

1

(b) 8

1

(c) XY

1

(d) both bars correctly plotted

1

correct labels on x-axis

allow labels mark even if bars incorrect

1

(e) 30

1

(f) any **one** from:

- because zebra fish is small and has high number of chromosomes
- not all animals are listed
- not enough data
- animals have different sizes during their life but the chromosome number stays the same

allow other sensible conclusions

1

[11]