

Cell Division

Mark Scheme

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Biology
Exam Board	AQA
Topic	4.1 Cell Biology
Sub-Topic	Cell Division
Difficulty Level	Silver Level
Booklet	Mark Scheme

Time Allowed: 18 minutes

Score: /18

Percentage: /100

Grade Boundaries:

M1.(a)

	Mitosis only	Meiosis only	Both mitosis and meiosis
How cells are replaced	✓		
How gametes are made		✓	
How a fertilised egg undergoes cell division	✓		
How copies of the genetic information are made			✓
How genetically identical cells are produced	✓		

*if more than one tick per row then no mark
ignore first row*

1
1
1
1

(b) (i) (adult) bone marrow

accept (umbilical) cord blood, skin, amniotic fluid / membrane

1

(ii) cells will not be rejected by the patient's body (if they have been produced by therapeutic cloning)

allow easier to obtain linked to embryo stem cells

or

(embryo stem cells) can develop into many different types of cells

allow doesn't need an operation linked to bone marrow

or

(embryo stem cells) not yet differentiated / specialised or undifferentiated

accept embryo cells are pluripotent

1

[6]

M2.

(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

[5]

- M3.** (a) circles round right hand **X** and **Y** gametes
*put two ticks **or** crosses by the circles* 2
- (b) 50:50 **or** 1:1 **or** 50% **or** 0.5 **or** $\frac{1}{2}$ equal **or** evens
credit even
*do not accept 2:1 **or** 50 / 50* 1
- (c) (i) 23 1
- (ii) 23
credit the same as the one above to be marked consequential 1
- (d) DNA
do not accept nucleic acid 1
- (e) same 1

[7]