

# Cloning

## Mark Scheme 3

<b>Level</b>	IGCSE(9-1)
<b>Subject</b>	Biology
<b>Exam Board</b>	Edexcel IGCSE
<b>Module</b>	Single Award (Paper 2B)
<b>Topic</b>	Use of Biological Resources
<b>Sub-Topic</b>	Cloning
<b>Booklet</b>	Mark Scheme 3

**Time Allowed:** 54 minutes

**Score:** /45

**Percentage:** /100

**Grade Boundaries:**

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

Question number	Answer	Notes	Marks
1 (a)	removal of nucleus / without a nucleus / no nucleus / eq;	ignore without DNA	1
(b)	retina / fovea / yellow spot / macula / macula lutea;	reject if in list eg. retina and iris	1
(c)	1. less (aerobic) respiration; 2. less energy / ATP; 3. <u>anaerobic</u> respiration; 4. lactic acid; 5. low pH / acidic; 6. denature <u>enzymes</u> ;	5. ignore if linked to carbon dioxide	4
(d)	1. thin / one cell thick; 2. pores / gaps / permeable / eq; 3. short <u>diffusion</u> distance / faster <u>diffusion</u> / better <u>diffusion</u> / eq;	reject cell wall	2

(e)	1. not rejected / no need to match / for specific person; 2. no shortage of organs / less waiting time / better supply / no need of donors / organs always available; 3. free from infection / free from disease / ref. to age;		2
(f)	1. nucleus (from body cell) put into empty egg / enucleated egg; 2. electricity; 3. mitosis / cell division; 4. embryo; 5. uterus / womb; 6. <u>surrogate</u> mother;	ignore DNA removed	5

**Total 15 marks**



Question number	Answer	Notes	Marks
3	cell; egg / ovum / sex; mitosis; embryo; uterus / womb; surrogate;	allow (udder) cell  look carefully at spelling and reject meiosis	6

**TOTAL 6 MARKS**



(ii)	1. less minerals / leaching / less humus / less dead organic matter from leaf fall / fewer dead trees / less decomposition of trees;  2. less soil / soil erosion / unstable soil / flooded soil / waterlogged soil / soil washed away / eq;	Mp 1 ignore nutrients / nitrogen	
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Total 9 marks

Question number	Answer	Notes	Marks
5(a)	1. contains gene / allele / DNA; 2. from different <u>species</u> ;	Mp 2 ignore organism  Mp 2 allow if both organisms are named and are clearly different species	2
(b)	insulin production / gene therapy / herbicide resistance / golden rice / organ transplants / human organs / named drug production / anti-freeze gene into strawberries / bioluminescence / goats and spider silk / eq;	Allow any transgenic example  Allow hormone production	1

Total 3 marks