

			AVAILABLE MARKS	
1	(a) (i)	any antigen labelled	[1]	8
	(ii)	Any three from: antigen or microbe is recognised as foreign; WBC/lymphocytes; produce antibodies/specific presence of antibodies; antibodies attached to antigen/complementary shape	[3]	
	(iii)	stops microbes spreading/stops reproducing/easier phagocytosis	[1]	
	(b)	phagocytosis; engulf; digest/accept destroy <b>using enzymes</b>	[3]	
2	(a) (i)	years scale on x-axis; points plotted correctly ([−1] for each error plotting) line/points joined with straight lines	[4]	
	(ii)	number of people living with AIDS increases with time from 2006 to 2013	[1]	
	(b) (i)	$2.2 - 1.9 = 0.3 / \frac{1.9}{2.2} / 86.36;$	[2]	11
	(ii)	Any <b>two</b> from four <b>money</b> spent on treatment/education/research/data, e.g. 8.8 billion more in 2013 than 2006; <b>people</b> receiving/get treatment; <b>fewer</b> new infections/fewer people newly infected with HIV; <b>more people</b> living with AIDS (not dying)	[2]	
	(c) (i)	Jenner	[1]	
	(ii)	smallpox	[1]	
3		no clear area around amoxicillin; clear area around neomycin; Explanation: amoxicillin didn't kill X/X is resistant to amoxicillin Neomycin kills X/X is not resistant to neomycin	[	

Description – Level of the solution has risen.

### Explanation

Any **two** from:

water/water moves;

from dilute to a more concentrated solution;

through a selectively permeable membrane/semi-permeable membrane [3]

**(b) vacuole** has shrunk

cell membrane pulled away from the cell wall

[2]

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7 (a) (i) asexual [1]

(ii) mitosis [1]

**(b)** Any **two** from:

large numbers;

only needs 1 parent;

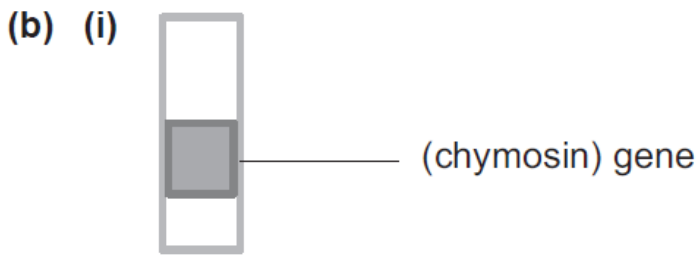
identical/plants

rare plants preserved;

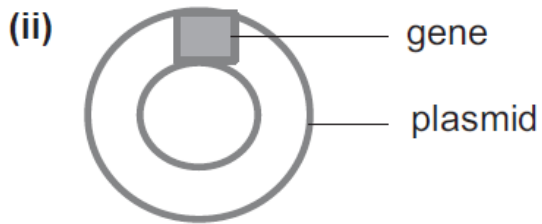
all year round/out of season; [2]

**(c) all have** the same (genetic) disease [1]

9 (a) insulin [1]



([1] for **drawing** of chymosin gene in a chromosome;  
[1] for a **correct label** – either the gene **or** chromosome) [2]



([1] for drawing; [1] for correct label) [2]

(iii) multiplication/replication/reproduction/protein synthesis [1]

(iv) amino acids [1]

(v) no animals used/vegetarians can eat the cheese  
don't have to kill animals [1]

(b) Indicative content:

- 1 Antibiotic (A) kills most of the bacteria;
- 2 Bacteria that survive have a **mutation**;
- 3 Makes them **resistant** to antibiotic A;
- 4 Resistant/surviving bacteria reproduce;
- 5 Resistant gene passed on to offspring;
- 6 making **whole colony resistant**;
- 7 Those that survive treatment with antibiotic **B** are resistant to both;
- 8 Superbugs have resistance to several antibiotics;