

## Answers to Year 11 summer work practice questions

### B1 Practice questions

- 01.1** chloroplasts; [1] carry out photosynthesis [1]  
**01.2**  $10 \times 1000 = 10000$  [1]  
 $\frac{10}{10000} = 1000$  [1] = 3 (orders of magnitude) [1]  
**02.1** osmosis [1]  
**02.2** cut up plant tissue, e.g. potato, into pieces of a similar mass and shape; [1] measure the mass of each one using balances / scales; [1] submerge each in a different concentration of sugar solution; [1] leave for a specified time, e.g. 30 minutes; [1] remove plant tissue and dry; [1] measure the mass and calculate mass change [1]  
**03** **three** from: tail to move through the female reproductive system to the egg; [1] mitochondria to supply energy (to the tail); [1] enzymes to break down the outer layers of the egg; [1] genes / genetic information from the father; [1] streamlined shape to help it move quickly [1]

### B3 Practice questions

- 01.1** clockwise from top: liver, pancreas, gall bladder [1 for all correct]  
**01.2** liver: produces bile; [1] gall bladder: stores bile and releases it into the small intestine [1]  
**02.1**  $\frac{(91 + 88)}{2}$  [1] = 89.5 [1; only 1 mark in total if anomalous result of 139 is included in calculation]  
**02.2** the lipase was broken down into glycerol and fatty acids; [1] the pH of the mixture decreased / became acidic [1]  
**02.3** the phenolphthalein went colourless more quickly when bile was added to lipase

### B2 Practice questions

- 01.1** therapeutic cloning [1]  
**01.2** **one** from: paralysis; [1] type 1 diabetes; [1] any other sensible answer, e.g. any inherited illness [1]  
**01.3** **two** from: can differentiate into any cell; [1] will not be rejected by the patient; [1] divide and grow rapidly [1]  
**01.4** the embryo is a potential new life / has a right to life; [1] once the cells are removed, the embryo is destroyed [1]  
**02.1** **one** from: to produce new cells for growth; [1] to replace worn out skin cells; [1] to produce offspring in asexual reproduction [1]  
**02.2** stage 2 (mitosis), stage 1, stage 3 [1]  
**02.3**  $48 \times 2 = 96$  [1]  
**02.4**  $\frac{20}{360} \times 37$  [1] = 2 (hours) [1]  
**03** stem and roots contain meristem tissue; this contains unspecialised cells; [1] these can differentiate to form different tissues and a new plant; [1] most animal cells differentiate permanently early in embryo development; [1] the cells cannot change back to being unspecialised [1]

and oil; [1] bile increases the rate of oil breakdown; [1] bile emulsifies fat droplets to increase the surface area of the lipid; [1] so lipase works more efficiently [1]  
**02.4** get someone else to repeat the experiment using the same method; [1] compare the two sets of results [1]

## B4 Practice questions

- 01.1** capillary [1]
- 01.2** its diameter is only slightly bigger than the red blood cell [1]
- 01.3**  $\frac{1}{1.4} = 0.7$  [1] mm/s [1]
- 02.1** blood flow to heart muscle reduced; [1] muscle receiving less oxygen / glucose; [1] cells not able to respire efficiently (and release energy); [1] heart contraction is not effective [1]
- 02.2** **a** stent: small balloon added into artery and inflated; [1] wire mesh tube added into artery [1]  
heart bypass: small piece of blood vessel taken from elsewhere in the body; [1] joined to coronary artery around the blockage to provide an alternative route for the blood [1]
- b** advantages of a stent: **two** from: only requires keyhole surgery so wound is very small; [1] only requires a local anaesthetic – fewer risks than general; [1] patient is able to resume with normal daily activities quickly after surgery; [1] surgery is quick and relatively cheap [1]  
disadvantage of a stent: cannot be used for badly blocked arteries [1]  
advantages of bypass surgery: **one** or **two** from: can be used where the blockage cannot be helped with stents; [1] can be used where the patient has many blockages [1]  
disadvantages of bypass surgery: **one** or **two** from: requires a general anaesthetic which carries risks; [1] long, expensive surgery; [1] risk of infection of wound; [1] recovery is long [1]

## B5 Practice questions

- 01.1** a drug that kills bacteria [1]
- 01.2** independent variable: treatment; [1]  
dependent variable: the diameter of the sores after 30 days of treatment [1]
- 01.3** it was a control [1] to check that the antibiotics helped reduce the size of the sores [1]
- 01.4** antibiotic B was the most effective [1] because it reduced the diameter of the sore the most [1]
- 01.5** bar chart [1] because the independent variable (type of antibiotic) is categories / categorical [1]
- 02.1** they kill the protists in the blood [1] and stop the disease developing [1]
- 02.2** the eggs / larvae are killed [1] before they have a chance to grow into adults [1]
- 03.1** the clear circle with the largest area was around disinfectant **D**; this shows that disinfectant **D** was the most effective at killing the bacteria; disinfectant **A** did not kill the bacteria – it was the least effective; the order of effectiveness, from most to least, was **D, B, C, A**
- 03.2**  $\frac{4.2 \text{ cm}}{2} = 2.1 \text{ cm}$   
 $\pi \times 2.1^2 = 14 \text{ (cm}^2\text{)} \text{ (to 2 s.f.)}$

## B6 Practice questions

- 01.1** flu is caused by a virus; [1] antibiotics only kill bacteria [1]
- 01.2** vaccine contains dead / inactive pathogens / viruses; [1] white blood cells produce antibodies; [1] memory cells 'remember' the antibody; [1] if body is infected with live virus, antibodies are made quickly [1]
- 01.3** the percentage increased [1]
- 01.4**  $7.8 \times \frac{64}{100} = 4.992 = 5$  million (people) [3]
- 01.5** the virus is not able to infect as many people [1] so it does not spread in the population [1]
- 02** new drugs help save lives / improve life quality; [1] we have a duty to provide care for unwell people; [1] drugs are tested on animals, which causes them to suffer; [1] drugs are tested on human volunteers, and can cause dangerous side-effects [1]

## B7 Practice questions

- 01.1** a group of cells that are dividing rapidly [1]
- 01.2** a disease that cannot be passed from person to person [1]
- 02.1** **three** from: the more cigarettes a person smokes, the higher their risk of developing mouth cancer; [1] the more alcohol a person drinks, the higher their risk of developing mouth cancer; [1] the risk of developing mouth cancer in people who smoke over 40 cigarettes a day is greatly increased (by around 5 times) if they drink 4 or more alcoholic drinks a day; [1] in people who smoke over 40 cigarettes a day the risk of developing mouth cancer

## B8 Practice questions

- 01.1** light intensity [1]
- 01.2** it absorbs the heat from the lamp [1] to control the temperature [1]
- 01.3**  $\frac{1}{0.1^2}$  [1] = 100 [1]
- 01.4** as the distance between the lamp and the pondweed decreased, the number of gas bubbles produced in 1 minute increased [1] up to 0.1 m; [1] after this distance, the number of bubbles stayed the same [1]
- 01.5** as the distance between the lamp and the pondweed decreased, the light intensity increased; [1] the plant received more light, so carried out photosynthesis at a faster rate; [1] at a distance of 0.1 m, decreasing the distance does not increase the rate of photosynthesis [1] because something else is limiting the rate, e.g. carbon dioxide concentration [1]
- 01.6** the measurement of volume of oxygen produced is not accurate; [1] the results are affected by random errors; [1] measure the volume of oxygen produced (rather than count bubbles); [1] use a measuring cylinder / gas syringe to collect gas and measure the volume; [1] repeat the measurements (to reduce the effect of random errors) [1]