Name: Roz:

Question 1

01.1 Organ

01.2
Palisade mesophyll → Contains the most chloroplasts
Spongy mesophyll → Contains many air spaces

01.3 Transpiration

01.4 Lignin

01.5 The upper epidermis is see-through so that sunlight can get through it to the palisade cells below. The palisade cells need the light for photosynthesis.

01.6
The pores are called stomata.
They are controlled by guard cells.

01.7 Vacuole

01.8 Active transport

01.9 Mitochondria

Question 2

02.1 The skin acts as a barrier to stop pathogens getting inside the body.

02.2
63 survived out of 210. So the fraction is 63/210.

02.3
Killed at pH1 = 210 - 23 = 187
Killed at pH5 = 216 - 185 = 31
Difference = 187 - 31 = 156
Number = 156

02.4
I think the student found the middle number between the results for pH1 and pH3.

Question 3

03.1
Platelets → Help clot the blood where the vaccine was injected
White blood cells → Produce antibodies to the measles virus

03.2 1968

03.3 From 1945 the number of people with measles went up, then it stayed high for a while. After about 1968 it started to decrease quickly.

03.4 It decreased.

03.5 Parents were worried their children would get condition X.

03.6 Have the research peer reviewed.

03.7 Because he was paid, so he might have been biased to get the results the people paying him wanted.

Question 4

04.1
For starch, you add iodine solution. If starch is there, it goes blue-black. If not, it stays brown/yellow.
For sugar, you add Benedict's solution. If sugar is there it will turn green, orange or brick red. If not, it stays blue.

04.2
The enzyme is amylase.
It broke the starch into sugar.

04.3 The type of bread

04.4

1. White bread is broken down the fastest.
2. Wholemeal bread takes the longest to taste sweet.

04.5
They repeated the experiment for each bread type three times. Then they worked out the mean average.

04.6
(58 + 55 + 61) / 3 = 174/3
X = 56 seconds

04.7 Each person's sense of taste is different.

Question 5

05.1 Ionising radiation and Viruses.

05.2 Mitosis

05.3
Before a cell divides, it needs to grow.
The DNA in the nucleus needs to replicate.

05.4 40%

05.5 Chromosomes are pulled to each end of the cell.

05.6 Cell membrane

05.7
Real width = 50mm / 800 = 0.0625 mm
0.0625 x 100 = 6.25
Real width of cell = 6.25 µm

05.8
Preclinical testing is done using people.
To check if its safe, it's tested on cells.

05.9 A placebo.

Question 6

06.1

1. The size of the potato pieces.
2. The volume of the salt solution (100 cm^3).

06.2 You should gently pat them dry with a paper towel.

06.3 A weighing scale or a balance.

06.4 0.1 g

06.5 D

06.6
change/start x 100 = 1.1 / 6.0 x 100 = 18.333
X = 18.33 %

06.7 Line graph

06.8
...potato cells lost water.
...process called osmosis.
...is partially permeable.

06.9 Concentration = 0.2 mol/dm^3

Question 7

07.1 Arteries

07.2 Pushing on the chest squeezes the heart, which pushes blood around the body. This delivers oxygen to the organs.

07.3 It gets oxygen into their lungs so it can go into their blood.

07.4 Statins

07.5 A stent is a little tube that is put inside the artery. It pushes the artery open wider so that more blood can flow through to the heart muscle.

07.6

1. Smoking increases your risk for all the diseases listed.
2. You are most likely to get disease H if you smoke.

07.7
(Student would have drawn a bar chart with the Y-axis labelled '% increase in risk', a scale going up to 70, and bars for F, G, H drawn to 20, 29, and 70 respectively. But they plot bar G at 30 instead of 29).

07.8 Having a bad diet with lots of fatty foods and also smoking.

Question 8

08.1 In the nucleus.

08.2 A, D and E

08.3
A person with CF has difficulty digesting food because their pancreas doesn't release enough digestive enzymes into the small intestine. This means that lipase can't break down fats, and amylase can't break down starch properly. The food doesn't get fully broken down.

This makes it hard to gain body mass because if the food isn't digested into small molecules like glucose and amino acids, it can't be absorbed into the blood. With less food being absorbed, the person gets fewer nutrients and less energy, so it's hard for them to grow or store fat.

08.4

1. They have a huge surface area.
2. The walls are really thin, only one cell thick.
3. They have a great blood supply with loads of capillaries around them.

08.5
If less oxygen gets into the blood, the body can't do as much aerobic respiration. This means less energy is released in the cells. This would make the person feel very tired and their muscles might not work as well. They might also get out of breath easily as their body tries to get more oxygen in.