

Movement of substances

1 How does oxygen move in and out of cells?

Diffusion



Movement of substances

2 Name the enzyme produced in salivary glands.

Amylase



Movement of substances

3 How are cells found in salivary glands adapted to produce amylase?

Many ribosomes which produce proteins (amylase is made of protein).



Movement of substances

4 Why is it useful to have lots of villi?

They provide a large surface area for increased diffusion of nutrients.



Movement of substances

5 Give one advantage and one disadvantage of using the modern ventilator rather than the iron lung ventilator.

Modern ventilator is more portable, allows freedom of movement; it is more uncomfortable and makes it more difficult to eat and speak.



Movement of substances

6 Explain why roots need to use the osmosis and active transport to absorb water and ions.

Solution in soil is more dilute so water moves from more dilute to more concentrated region. Concentration of ions in soil is less so energy is needed to move ions into the plant.



Movement of substances

7 Water loss from leaves is known as what?

Transpiration



Movement of substances

8 How does the closing of stomata help a plant?

It reduces water loss.



Movement of substances

9 Why do root cells contain many mitochondria?

Energy released from cellular respiration is needed for active transport.



Movement of substances

10 Why do root cells store starch?

Starch is an energy source for respiration.



Movement of substances

11 Give three features of the alveoli that allow large amounts of oxygen to enter the blood.

Large surface area, thin (one cell thick), good blood supply



Movement of substances

12 Breathing allows large amounts of oxygen to enter the blood. How does breathing do this?

It brings oxygen into lungs and keeps the oxygen concentration > blood oxygen concentration.



Movement of substances

13 Explain why plant cells swell up when placed into water.

Water enters via semi-permeable membrane. This is called osmosis.



Movement of substances

14 Why do animal cells placed in water burst, but plant cells don't?

Plant cells have a cell wall, animal cells don't.



Movement of substances

15 Define diffusion.

The movement of molecules from an area of high concentration to an area of low concentration.



Movement of substances

16 Define active transport.

Movement of molecules from low concentration to high concentration which requires energy.



Movement of substances

17 Apart from water, what else is contained in sweat?

Ions



Movement of substances

18 Why do plants lose water more rapidly on a warm and windy day?

Faster diffusion because the molecules move faster and the concentration of water in the air around the leaf remains low.



Movement of substances

19 Give three features of villi that help the small intestines to function.

Large surface area, one cell thick, good blood supply, have enzymes



Movement of substances

20 Explain how emphysema reduces the amount of oxygen which diffuses into the blood.

Lung tissue has a thicker surface and fewer alveoli.



Movement of substances

21 What is osmosis?

The movement of water from a high concentration of water to a low concentration of water.



Movement of substances

22 Give two examples of where osmosis is used in living things.

Water absorption in the large intestines; guard cells to maintain turgor; uptake of water by root cells



Movement of substances

23 Why do plants need stomata?

To allow carbon dioxide to enter.



Movement of substances

24 Describe the changes that take place in the composition of blood as it passes through the lungs.

Concentration of oxygen increases and concentration of carbon dioxide decreases.



Movement of substances

25 Which part of the blood transports most carbon dioxide?

Plasma



Movement of substances

26 Which part of the blood transports most oxygen?

Haemoglobin/red blood cell



Movement of substances

27 Give one feature of the cell wall which allows the cell to become turgid.

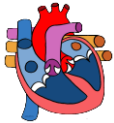
Elastic



Transport systems

28 Water is transported up the stem to the leaves through which plant feature?

Xylem



Transport systems

29 Sugars are transported to plant storage organs through which feature?

Phloem



Transport systems

30 Give one method of treating a narrowed blood vessel.

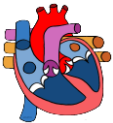
Stent/ by-pass operation/statins



Transport systems

31 Which part of the blood transports urea?

Plasma



Transport systems

32 Which part of the blood helps blood clot at the site of a cut?

Platelets



Transport systems

33 Why don't red blood cells have a nucleus?

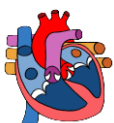
Allows cell to have more haemoglobin for oxygen transport.



Transport systems

34 Name the red pigment found in red blood cells.

Haemoglobin



Transport systems

35 Describe the heart cycle.

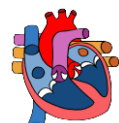
A ventricle fills with blood by the contraction of an atrium. When a ventricle contracts, blood is forced into an artery. When a ventricle relaxes, the backflow of blood into it is prevented by the closing of a semi-lunar valve.



Transport systems

36 What type of blood vessels join arteries to veins?

Capillaries



Transport systems

37 State three things that are carried around the body in the blood plasma.

Red blood cells, white blood cells, water, urea, minerals, platelets, vitamins, hormones, proteins, glucose, amino acids, glycerol, fatty acids, antibodies, cholesterol, carbon dioxide, drugs, toxins, viruses, bacteria, antitoxins



Homeostasis

38 Which organ in the body monitors the concentration of glucose (sugar) in the blood?

Pancreas



Homeostasis

39 Describe, as fully as you can, what happens to amino acids that cannot be stored in the body.

They are broken down and converted to urea inside the liver; urea is then filtered out by the kidneys and stored in urine in the bladder.



Homeostasis

40 Describe the role of blood vessels in the control of body temperature.

If body temperature too high blood vessels supplying skin (capillaries) dilate / widen; if body temperature is too low blood vessels supplying skin (capillaries) constrict / narrow; so more / less blood flows through skin (capillaries) or nearer the surface of the skin; so more / less heat is lost (from the skin by radiation)



Homeostasis

41 Suggest why an athlete overheats in humid conditions when the temperature is above 18°C.

The sweat released cannot evaporate in humid conditions so less heat is lost from the athlete's body.



Homeostasis

42 Explain why a man's urine contains a higher concentration of mineral ions and urea on a hot day than on a cold day.

Because more sweating occurs on a hot day more water is lost as sweat. The kidney will reabsorb more water and the volume of water in urine will be lower.



Homeostasis

43 Name two substances found in the urine of a healthy person.

Urea, ions, water



Homeostasis

44 Describe what happens to glucose in the blood of a healthy person when the blood enters the kidney.

The glucose is filtered (into kidney tubule) and then all is reabsorbed into the blood.



Homeostasis

45 Explain why the urine of a diabetic person may contain glucose.

Not all glucose reabsorbed because the concentration in the tubule is too high.



Homeostasis

46 What process brings about shivering?

Muscle contraction



Homeostasis

47 Explain how shivering increases body temperature.

Respiration releases heat.



Homeostasis

48 Explain why protein is not found in the urine of a healthy person.

Proteins are too large to fit through the pores in the filter inside the kidneys.



Homeostasis

49 Which part of the brain monitors the fall in core body temperature?

thermoregulatory centre/hypothalamus



Homeostasis

50 How does the thermoregulatory centre inside the brain detect the fall in core body temperature?

It has receptors that monitor blood temperature.



Homeostasis

51 Explain why someone who has been drinking alcohol is more likely to die of hypothermia.

The blood vessels are more dilated so more blood is closer to the surface and more heat is lost



Homeostasis

52 Explain how dialysis treatment restores the concentrations of dissolved substances in the blood to normal levels.

The dialysis fluid contains the ideal concentration of glucose and mineral ions. Waste passed through a partially permeable membrane out of the blood by diffusion along the concentration gradient.



Homeostasis

53 Describe the parts played by the brain and the skin in monitoring body temperature

The thermoregulatory centre monitors blood temperature; the skin contains receptors and sends impulses to the thermoregulatory centre.



Homeostasis

54 Explain why the amount of insulin injected by diabetics needs to be carefully controlled.

Too much insulin leads to too low blood sugar, too little leads to too much blood sugar/ diet varies/ too much or too little might lead to coma



Homeostasis

55 What features of blood make someone's blood type group O?

No antigens on the surface of red blood cells.



Homeostasis

56 Describe three different ways by which most mammals are able to maintain a constant body temperature when the temperature of the environment falls.

Hair/Fur stands on ends to increase insulation; blood vessels constrict so less blood is near the surface and less heat is lost; shivering to generate heat



Homeostasis

57 Where is insulin produced?

Pancreas



Homeostasis

58 Explain the role of insulin in controlling blood sugar levels.

It lowers blood sugar levels by converting glucose to glycogen in the liver; it also increases the uptake of glucose by body cells.



Homeostasis

59 What is the job of the circulatory system?

To transport blood and other substances around the body.



Homeostasis

60 Explain, using insulin as an example, what is meant by negative feedback.

Higher blood sugar level results in increased secretion of insulin; effect of insulin is to lower blood sugar which in turn reduces rate of insulin secretion; overall result is to keep fluctuations in sugar level to a minimum.



Homeostasis

61 Explain why the concentration of urea in the liquid in the bladder is much greater than the concentration of urea in the liquid that is filtered in the kidneys.

Most water is reabsorbed, unlike urea.



Homeostasis

62 Explain, as fully as you can, why respiration has to take place more rapidly during exercise.

More energy is needed for increased muscular activity.



Homeostasis

63 Explain fully what would happen if somebody ate some glucose tablets.

Glucose level rises, pancreas releases insulin, glucose is converted to glycogen in the liver, glucose levels return to normal



Humans & Environment

64 Give two functions of air bubbles in a fermenter that grows *Fusarium* fungi used to produce mycoprotein

Temperature maintenance/mixing and aerobic respiration



Humans & Environment

65 Why is glucose entered to a fermenter that grows *Fusarium* fungi used to produce mycoprotein?

Fuel used in respiration



Humans & Environment

66 What causes a fermenter to heat up?

Respiration is an exothermic reaction.



Humans & Environment

67 How is contamination of a fermenter by microorganisms prevented?

Sterilise the fermenter before use; filter the air that enters



Humans & Environment

68 Farm animals give off large amounts of methane. What is the effect of methane on the atmosphere?

It absorbs energy / heat radiated by Earth. Some of the heat is re-radiated and absorbed by greenhouse gases enhancing the greenhouse effect.



Humans & Environment

69 Name the process that produces the methane in biogas.

Anaerobic respiration/fermentation



Humans & Environment

70 Explain how clearing forests and replacing the forests with palm oil trees to produce fuel for motor vehicles will affect the composition of the atmosphere.

Deforestation increases the amount of carbon dioxide in the atmosphere as less is absorbed through photosynthesis/due to burning of the forest. Burning palm oil is carbon neutral.



Humans & Environment

71 Describe the processes that occur in the biogas generator.

Faeces/manure are broken down by fermentation/anaerobic respiration into methane.



Humans & Environment

72 Give three ways in which the efficiency of human food production can be increased.

Keep animals indoors so less energy is used to maintain body temperature; restrict movement so less energy is used; shorten the food chain so less energy is lost at each stage



Humans & Environment

73 Give two ways in which global warming might affect species on a worldwide scale.

Loss of habitat; change in migration routes



Humans & Environment

74 Why do large supermarkets often import fruits and vegetables from abroad instead of the UK?

Cheaper; available all year



Humans & Environment

75 Why is importing fruits and vegetables from abroad environmentally damaging?

Longer transport route so more fuel is burnt and more CO₂ added to atmosphere.



Humans & Environment

76 Explain why rain forests are being burnt to provide land for crops in many parts of the world.

Increased human population and increased standard of living



Humans & Environment

77 Why does cleared rain forest land often produce crops for only a few years?

The nutrients that are absorbed from the soil are not replaced.



Humans & Environment

78 What is the principal source of the 'human-made' methane in the atmosphere?

Rice fields



Humans & Environment

79 Give two reasons why rain forests are being cut down at an increased rate.

Timber demand high due to more housing needs; more farm land is needed



Humans & Environment

80 How does deforestation affect the composition of the atmosphere?

More carbon dioxide and less oxygen due to less photosynthesis and more decay by microorganisms; burning of wood increases CO₂ as carbon locked up in wood is released; water vapour content reduced as less transpiration takes place



Humans & Environment

81 Describe how hormones can be used to improve the efficiency of producing food from plants.

Used as a herbicide; control ripening; use to grow many new plants from tissue cultures



Humans & Environment

82 Give one method by which fish stocks can be preserved.

Fishing quotas, net size, no fishing during breeding season, no fishing in breeding grounds



Humans & Environment

83 Explain why some consumers will not buy tuna that has been grown on fish farms.

They feel that this is cruel to tuna/unethical or the fish have less flavour/are of poorer quality



Humans & Environment

84 Explain why the final decision on how many cod the fishermen are allowed to catch may not depend entirely on data produced by scientists.

Big demand for fish; fear for jobs; impact of pressure groups



Humans & Environment

85 What human activity releases sulphur dioxide into the atmosphere?

Burning fossil fuels



Humans & Environment

86 What effect does sulphur dioxide have on rain water?

Makes it acidic/lowers the pH



Humans & Environment

87 What effect does sulphur dioxide have on plants and animals?

Kills plants/trees; lakes become too acidic for animals or plants to grow/survive



Humans & Environment

88 How do gases produced in towns make lakes much more acidic in country areas?

Gases are blown by wind and spread into the air where they mix with rain water. Acidic rain water deposits into lakes.



Humans & Environment

89 Give two reasons why it would be better to eat mycoprotein instead of beef.

Mycoprotein contains less fat and more fibre so prevents heart diseases and colon cancer.



Humans & Environment

90 Give one reason why it would be better to eat beef instead of mycoprotein.

Beef contains more protein so is better for growth and cell repair/enzyme production

