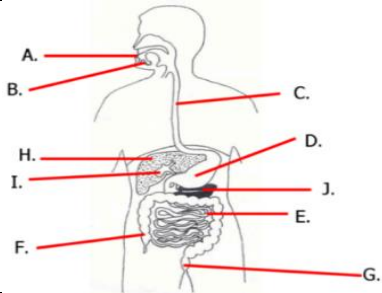


Biology Unit 1.2 Human organ systems

Tissues, organs and organ systems	
<p>1. Name the organs Labelled D, E, I and J below</p>	 <p>D. Stomach E. Small intestine I. Gall bladder J. Pancreas</p>
2. Define 'tissue'	A group of cells with similar structure and function eg muscle.
3. Function of the epithelial tissue in the stomach	Covers the outside and the inside of the stomach
4. Function of the muscular tissue in the stomach	Contracts to churn food with digestive juices
5. Function of glandular tissue in the stomach	Produces digestive juices
6. Define 'organ'	A group of tissues that work together to perform specific functions, eg the stomach.
Enzyme theory	
7. Describe the structure of enzymes	Made of protein / amino acids. They have an active site which is complementary to the substrate
8. Name the area on an enzyme which has a complementary shape to the substrate	Active site
9. What is formed when the enzyme and substrate bind together	Enzyme substrate complex
10. Describe the lock and key theory of how enzymes function	<ol style="list-style-type: none"> 1. Enzyme has an active site with a specific shape 2. Shape of the substrate is complementary to the shape of the active site 3. Substrate fits into the active site 4. Bonds in substrate are broken
Factors affecting enzyme rate of reaction	
11. Why does rate of reaction decrease when an enzyme is not at its optimal pH?	Because they denature at lower and higher pHs
12. Why does enzyme rate of reaction decrease between 40°C and 60°C? (2)	<ul style="list-style-type: none"> • The enzyme denatures • The substrate no longer fits into the enzymes active site.
13. Why does enzyme rate of reaction increase between 0°C and 40°C? (2)	<ul style="list-style-type: none"> • Particles have more kinetic energy • There are more successful collisions between the substrates and enzymes active site.
Digestive System and Enzymes	
14. Describe the function of the mouth	Chew the food to increase its surface area
15. Name the substrate and product of protease (2)	Protein into amino acids
16. Describe the function of the salivary glands	Produces amylase and releases saliva
17. Name the substrate and products of lipase (2)	Lipids (fats) are broken down into fatty acids and glycerol
18. Describe the function of the small intestine (3)	<ul style="list-style-type: none"> • Produces protease, lipase & amylase • Digests food • Absorbs the soluble food into the bloodstream
19. Describe the function of the pancreas	Gland that produces protease, lipase & amylase
20. The substrate and product of carbohydrase (2)	Starch into sugars
21. Describe the function of the stomach	Digests protein
Bile	
22. Describe the function of bile (2)	<ul style="list-style-type: none"> • To neutralise acid from the stomach • to emulsify fat
Food tests	
23. What is the test for starch and what is seen if starch is present	Test: Iodine Positive result: Blue/black colour

24. What is a test for lipids(fats) and what is seen if lipid is present	Test: i)Sudan III test or ii)emulsion test Positive result: i)red layer or ii)cloudy white emulsion
25. What is the test for protein and what is seen if it is present	Test: Biuret test Positive result: Purple/violet colour
26. What is the test for reducing sugar and what is seen if it is present	Test: Benedict's test Positive result: Green/orange/brick red precipitate

Breathing system

27. The surface area of the lungs is increased by	alveoli
28. What separates the lungs from the abdomen	The diaphragm

Heart structure

29. What does the circulatory system do	Transports substances around the body
30. What does the heart do	Pumps blood around the body

<p>31. Label the diagram by putting numbers on the correct label lines:</p> <ol style="list-style-type: none"> 1. Left atrium 2. Right ventricle 3. Pulmonary artery 4. Vena Cava 5. Bicuspid valve 6. Aorta 7. Pulmonary vein 8. Semi lunar valve 9. Draw an X where the hearts own pacemaker is found 	
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32. Blood returns to the heart through the	veins
33. Chamber which pumps oxygenated blood to the rest of the body	<ul style="list-style-type: none"> • The left ventricle
34. Which blood vessel supplies blood to the heart muscle	<ul style="list-style-type: none"> • Coronary artery
35. What does an artificial pacemaker do	<ul style="list-style-type: none"> • Corrects irregularities in heart rate

Blood vessels

36. What do arteries do	Carry high pressure blood away from the heart
37. What are the adaptations of arteries to carry blood under high pressure	<ul style="list-style-type: none"> • Thick walls • containing muscle and elastic fibres
38. What are the adaptations of veins to carry blood under low pressure	<ul style="list-style-type: none"> • Wide lumen • Valves to prevent back flow
39. What happens in the capillaries	Exchange of substances between the blood and cells.
40. What adaptation do capillary walls have	<ul style="list-style-type: none"> • <u>Very</u> thin walls

Blood

41. What does blood plasma do	Transports: -carbon dioxide, soluble products of digestion & urea
42. How are red blood cells adapted to carry oxygen to the tissues	<ul style="list-style-type: none"> • No nucleus • Packed with haemoglobin
43. Haemoglobin combines with oxygen in the lungs to form what substance	Oxyhaemoglobin
44. What do platelets do	Help to clot at the site of a wound
45. Name the risks of using blood products to treat patients	<ul style="list-style-type: none"> • Possibility of infection • Possibility of rejection

CHD

46. In Coronary Heart Disease, what causes the coronary arteries to narrow	Layers of fatty material	
47. Why is the narrowing of coronary arteries a problem	<ul style="list-style-type: none"> • It reduces blood flow • which reduces oxygen to the heart muscle 	
48. What drugs can be used to reduce blood cholesterol	<ul style="list-style-type: none"> • Statins 	
49. What do stents do	Keep arteries open	
50. What may cause some blood to flow backwards so the heart cannot pump efficiently	Faulty valves / valves damaged	
Respiration		
51. Name the exothermic chemical reaction which transfers energy in cells	Respiration	
52. Where does respiration occur	In all living cells, all the time	
Aerobic respiration		
53. Where does aerobic respiration take place?	Mitochondria of cells	
54. Write the word equation for aerobic respiration	Glucose + Oxygen → Carbon dioxide + Water	
55. Respiration in cells releases energy. List two things this energy is used to do.	Build larger m olecules, M ovement, M aintain body temperature	
Anaerobic respiration		
56. Write the word equation for anaerobic respiration in animal cells	Glucose → Lactic acid	
57. What is the name for anaerobic respiration in yeast or plant cells and its word equation	<ul style="list-style-type: none"> • Fermentation (only in yeast cells) • glucose → ethanol + carbon dioxide 	
Effects of exercise		
58. State the effects of exercise on the body	Increased heart rate and breathing rate	
59. What happens if the blood cannot supply enough oxygen to the muscle cells	Anaerobic respiration takes place as well	
Metabolism		
60. Define metabolism	The sum of all chemical reactions in a cell or in the body	
61. What do plants make from glucose and nitrate ions and use to synthesise proteins	Amino acids	
62. What are excess proteins and amino acids broken down into for excretion	Urea	
63. Name metabolic processes that occur in living organisms	1. Respiration 2. Produce lipids, glycogen, starch, cellulose, amino acids and protein 3. Breakdown excess amino acids to form urea for excretion	
Higher Tier		
1. Write the symbol equation for aerobic respiration. (1) Balance the equation if you can (1)	$C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O$ $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$	
2. What happens to the lactic acid from anaerobic respiration in muscle cells? (3)	Removed from the muscles by the blood It is broken down by the liver with oxygen (oxidised) Into carbon dioxide and water	
3. Define oxygen debt	The amount of oxygen the liver needs in order to break down the lactic acid after exercise.	
	Advantages	Disadvantages
Stents	Lower heart attack risk Quick recovery time	Risk infection/ blood clot from surgery
Statins	Reduce cholesterol and risk of CHD, stroke and heart attack	Risk of side effects Effect not instant
Biological heart valves	Work well, Don't need anti blood clotting drugs	Only last for 10 – 15 years

Mechanical heart valves	Last a long time	Need to take drugs to prevent blood from clotting
Heart transplant	Can effectively pump blood Don't need anti blood clotting drugs	Wait for suitable donor Chance of rejection/ take immunosuppressant drugs
Artificial heart	Can effectively pump blood Rejection less likely	Large surgery May wear out/ fail/ not permanent Need to take drugs to prevent blood from clotting