

QUESTION ONE

Different adaptations enable different animal groups to survive successfully

You are required to describe and give reasons for how your chosen biological process by your three animal groups. You may use clearly labelled diagrams in your response.

Name of animal group one: Fish

Describe and give reasons for how your chosen biological process is carried out by this animal group.

Fish have a closed ~~double~~ single circuit circulatory system for internal transport. It has ^{low pressure} ~~low pressure~~ Oxygen ~~is~~ taken through the gills and transported through blood to its heart. ~~They have veins which return to the heart and arteries~~ The heart has two chambers, an atrium and a ventricle the blood is pumped from the ventricle to the body tissues where ~~it~~ oxygen and nutrients are absorbed. Then the blood is taken from the body ~~and~~ straight back to the lungs where ~~no~~ carbon dioxide is ~~released~~ ^{ERRO} released from the blood and oxygen is absorbed to start the system again. The heart has valves to prevent back flow of blood. The blood flow loses great pressure before reaching the lungs after the ~~ERRO~~ capillary beds. Haemoglobin is in the blood to carry ~~the~~ oxygen. Fish are supported by the movement of water that they live in and they are constantly moving which helps the blood to remain flowing through the circuit where there is low pressure. ^{Little or no understanding} of the gas exchange system in fish, but adequate understanding of the transport system

Name of animal group two: Amphibians and reptiles - FROGS

Describe and give reasons for how your chosen biological process is carried out by this animal group.

Amphibians and reptiles such as Frogs have a closed double circuit circulatory system with a 3 chambered heart. The blood is pumped twice with one beat as it is a double circulatory system. ^{at high pressure} Blood leaves the ~~ventricle~~ ventricle of the heart and goes to the body tissues ~~where blood gets~~ through arteries and capillaries where gasses and nutrients are absorbed. The blood returns to the Left atrium to be pumped from the ~~ventricle~~ ventricle to the lungs. At the lungs more Oxygen is absorbed and carbon dioxide wastes released before it is pumped back to the right atrium. Haemoglobin present in the blood allows for O₂ to be carried. Valves are on veins and arteries to prevent backflow. Because there is only 3 chambers, ^{2 chambers} one ventricle, the ~~two~~ oxygenated and de-oxygenated blood is mixed ^{a little} in the ventricle and some deoxygenated blood is pumped to the body and some ^{already} oxygenated to the lungs. The reptiles and amphibians are supported with the availability of extra oxygen ~~in~~ as they live half in water. ~~and~~ Mineral ions, water, gasses and ~~for~~ hormones and vitamins are all things that are transported via their internal transport system. Due to blood being pumped twice (double system) ^{in a} obtaining these things is far more efficient.
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unclear

Name of animal group three: Humans and mammals

Describe and give reasons for how your chosen biological process is carried out by this animal group.

Humans and mammals have a closed ~~circuits~~ double circuit circulatory system with a 4 chambered heart. Veins ~~and~~ arteries and capillaries carry blood around the body. Haemoglobin allows oxygen to be carried in the blood. ~~Blood~~ Oxygenated blood ~~is~~ is pumped from the right ventricle to the body tissues where it is taken to muscles through capillaries. Veins return the ~~a~~ now de-oxygenated blood to the left atrium where it moves to the left ventricle and is pumped to the lungs to become re-oxygenated and pumped back to the heart at the right atrium. ~~The valves on the left side~~ Valves on the vessels prevent backflow. Through this transport water, gases, vitamins, metal ions and hormones are transported. The separated oxygenated and deoxygenated blood is very efficient ~~and~~ so more ~~is~~ and the delivery rate of oxygen is fast ~~allowing~~ giving us a greater physical capacity. The pulmonary circuit, ~~and~~ from heart to lungs and back and the systemic circuit, from the ~~body~~ ^{heart} to body and back both have blood pumped from the heart to them at the same time with one pump as it is a double circulatory system. This is very effective and means that we have high pressure.

QUESTION TWO

Discuss the reasons for the **diversity** in the structure and function for the biological process in your three animal groups.

~~One reason for the differences between the fish, amphibians and reptiles and humans~~

Fish have a suitable circulatory system or internal transport system for the lifestyle they live. The low pressure single circuit system is sufficient as they live in water the movement of the water, therefore they are constantly moving ~~helps~~ help the movement of the blood in their low pressure system.

In amphibians and reptiles in order for them to be able to move faster and grow bigger than fish they need a double circulatory system that transports gases and nutrients around their body faster than in the fish. But unlike humans their heart is only 3 chambered which allows the O_2 and CO_2 blood to mix a little so it is not as efficient. But to aid this living half the time in water need they get O_2 from the water as well as ~~air~~ ^{explaining} air.

Humans and mammals double circulatory system has a 4 chambered heart with CO_2 and O_2 separated which ~~allows~~ for is more efficient ~~but~~ but the double circulatory system means it requires more energy to keep it going. The more

efficient delivery ~~at~~ of ~~the~~ O_2 with ~~separate~~ separate vessels of oxygenated and deoxygenated blood allows humans and mammals to grow bigger and more fit.

There is no explanation of why this system works well for cold blooded organisms such as the frog.

The mammals 4 chambered heart ensures rapid & efficient movement of highly oxygenated blood to the body organs - helping thermal regulation & rapid sustained muscle movement - This should be related to survival in the

Clear accurate annotated ~~environment~~ diagrams may have assisted this learner.

Some descriptions show similarities across all 3 animal groups - eg haemoglobin to carry oxygen, valves to prevent backflow etc.

This candidate needs to show a clear understand of the purpose of the circulatory system.
More explanations of the

reasons for the adaptations are needed. More discussion & comparisons of the significance of these animal adaptations in relation to their survival is needed, ~~for~~ their environment.

The use of "lungs" in fish is an obtrusive & fundamental error.

There is little linking to the gas exchange system.