

## CHAPTER SUMMARY

- Circulatory system is made up of three principal components: heart, blood vessels and blood.
- The main purpose of circulation is to transport and distribute oxygen and nutrients to every part of the organism.
- Cardiac circulation in animals is of two types: single circulation which requires blood to pass through the heart like in fishes; and double circulation when the blood passes by the heart twice, once through the pulmonary circuit and once through the systemic circuit.
- The heart of vertebrates varies in the number of chambers in fishes, three chambers in amphibians and four chambers in birds and mammals.
- The heart has three layers: the outermost is the epicardium, the middle is the myocardium as the thickest layer and the innermost is the endocardium. The main function of the heart is to pump blood through the blood vessels.
- Contraction of the heart is initiated by the sinoatrial node that spreads to the AV node going to the bundle of His and Purkinje fibers in mammals.

□ There are three kinds of blood vessels, arteries, veins and capillaries.

□ Arteries have a smaller lumen with highly elastic walls. Veins have a larger lumen with less elastic walls. Capillaries are minute blood vessels that is the site of exchange of gases and nutrients.

□ Blood is around 4.5 liters in female humans and 5.0 liters in male humans.

□ Blood is made up of plasma and formed elements.

□ Plasma is a combination of water, ions, proteins, and organic substances needed by the body cells.

□ Formed elements of the blood is 45% and consists of red blood cells, white blood cells and platelets.

□ In plants, the vascular tissue is responsible for the transport of nutrients and water throughout the plant body. This is done by the forces of pressure gradient, cohesion and adhesion.

□ Xylem conducts water and phloem conducts organic nutrients. The cohesion-tension theory explains the upward movement of water in water throughout the plant body.