Learning objectives for the biology-exam April 2013

The transport system

~~H.5.1~~	~~Explain the events of the cardiac cycle, including atrial and ventricular systole and diastole, and heart sounds.~~
~~H.5.2~~	~~Analyse data showing pressure and volume changes in the left atrium, left ventricle and the aorta, during the cardiac cycle.~~
H.5.3	Outline the mechanisms that control the heartbeat, including the roles of the SA (sinoatrial) node, AV (atrioventricular) node and conducting fibres in the ventricular walls.
H.5.4	Outline atherosclerosis and the causes of coronary thrombosis.
H.5.5	Discuss factors that affect the incidence of coronary heart disease.

6.4 Gas exchange

6.4.1	Distinguish between *ventilation*, *gas exchange* and *cell respiration*.
	Explain why organisms must exchange respiratory gases with their environment
	Name the process of cell respiration in words and as chemical formula
	Describe the essential features of gas exchange surfaces and their significance in terms of gas exchange rates. Explain the significance of the surface area:volume ratio to the exchange of gases with the environment.
6.4.2	Explain the need for a ventilation system and explain how it fulfils its role.
6.4.3	Describe the features of alveoli that are adapted to their role in gas exchange.
6.4.4	Draw and label a diagram of the ventilation system, including trachea, lungs, bronchi, bronchioles and alveoli.
	Draw a detail of an alveolus to show its relationship with the surrounding capillaries.
6.4.5	Explain the mechanism of ventilation of the lungs in terms of volume and pressure changes caused by the internal and external intercostal muscles, the diaphragm and abdominal muscles.
	Distinguish between quiet and forced breathing and comment on the involvement of muscles in each of these.
	Explain how changes in lung volume during breathing can be measured using spirometry. As required, interpret a spirogram showing changes in lung volumes in different situations, including at rest and during exercise.
	Understand the relationship between the ventilation system and the internal transport system in humans.
	Be able to analyse and discuss results from experimental studies