Unit 2b Key Area 6

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| **The heart is made of** | cardiac muscle |
| **The four chambers of the heart** | Right Atrium, Right Ventricle, Left Atrium and Left Ventricle |
| **Pulmonary artery** | carries blood to the lungs from the heart |
| **Pulmonary vein** | carries blood from the lungs to the heart |
| **The wall of the left ventricle is thicker than the right** | because the left ventricle pumps blood all around the body whereas the right ventricle pumps blood to the lungs |
| **Atrio ventricular valves** | prevent blood flow of blood from ventricles to atria |
| **Semi-lunar valves** | prevent back flow of blood into the ventrles from the pulmonary and aorta arteries |
| **These valves close during ventricular contraction** | Semi-lunar valves |
| **Stroke volume** | The volume of blood expelled by each ventricle per contraction |
| **Cardiac output** | Heart rate x Stroke Volume |
| **Systole** | The period of contraction of the heart during one complete heart beat |
| **Diastole** | The period of relaxation of the heart during on complete heart beat  |
| **During Atrial contraction and Ventricular diastole** | the atrio-ventricular valves open and the semi-lunar valves close |
| **During ventricular systole and atrial diastole** | the atrio-ventricular valves close and the semi-lunar valves open |
| **Sino-atrial node (SAN)** | also called the pacemaker, sets the rate at which the heart contracts |
| **Auto-rhythmic cells of the SAN are found** | in the wall of the right atrium |
| **Impulses from the SAN spreads through the muscles cells of** | the two atria, making them contract simultaneously (atrial systole) |
| **Atrio-ventricular node (AVN) is located** | near the base of the atria |
| **Impulses received by the AVN pass into** | a bundle of conducting fibres which divide into left and right branches into each ventricular wall causing ventricular systole |
| **Ventricular systole occurs slightly later than atrial systole** | allowing for the ventricles to fill completely before they contract |
| **An Electrocardiogram (ECG)** | detects electrical currents which have been produced by impulses from the SAN which spread through the ventricle |
| **Heart beat is regulated by** | both nervous and hormonal control |
| **Control centres in the medulla regulate** | the rate of the SAN through the antagonistic action of the autonomic nervous system |
| **The Cardio-accelerator centre of the brain** | sends its nerve impulses via sympathetic nerves to the heart |
| **The Cardio-inhibitor centre of the brain** | sends its nerve impulses via a parasympathetic nerve to the heart |
| **Impulses from the sympathetic nerve to the SAN leads to** | an increase in heart rate due to the sympathetic accelerator nerves releasing nor-epinephrine (noradrenaline) |
| **Impulses from the parasympathetic nerve to the SAN leads to** | a decrease in heart rate due to the slowing parasympathetic accelerator nerves releasing acetylcholine |
| **During exercise or stress** | epinephrine (adrenaline) is released from the adrenalin glands which increases heart rate |
| **Normal ECG patterns consist of three waves** | P wave, QRS wave and T Wave |
| **Blood pressure is highest** | in the aorta and pulmonary artery |
| **Blood pressure in the aorta is lowest during** | ventricular diastole |
| **Hypertension** | The prolonged elevation of blood pressure when at rest eg. above 140/90 mmHg |
| **Factors which can lead to hypertension include** | high fat diet, continuous stress, not enough exercise, eating too much salt, overweight |