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Assignment on physiology

DISCUSS LONG TERM REGULATION OF MEAN ARTERIAL BLOOD PRESSURE

Increased arterial pressure stretches the wall of the blood vessel, triggering the baroreceptors. These baroreceptors then feedback to the autonomic nervous system. The ANS then acts to reduce the heart rate and cardiac contractility via the efferent parasympathetic fibres (vagus nerve) thus reducing blood pressure.Long-term regulation involves mainly the regulation of extracellular fluid volume by pressure natriuresis mechanisms residing in the kidney and by widespread actions of angiotensin 2. Studies in hypertensives have suggested that the long-term-controlled variable is not arterial blood pressure, but the balance between intake and output of fluid and electrolytes. If the kidney requires a higher perfusion pressure to achieve that balance then daily blood pressure regulation occurs

around an appropriately higher setpoint.

SHORT NOTE ON THE FOLLOWING:
PULMONARY CIRCULATION:
Pulmonary circulation is the system of transportation that shunts de-oxygenated blood from the heart to the lungs to be re-saturated with oxygen before being dispersed into systemic **circulation**. ... It then flows through the pulmonic valve into the **pulmonary** artery before being delivered to the lungs.**Pulmonary circulation** moves **blood** between the heart and the lungs. It transports deoxygenated **blood** to the lungs to absorb oxygen and release carbon dioxide. The oxygenated **blood** then flows back to the heart.**Pulmonary**- It **begins** on the right ventricle and **ends** on the left atrium. 8. In the **pulmonary** circuit, blood takes up oxygen in the lungs.

CIRCLE OF WILLIS: The **Circle of Willis** is a ring-like arterial structure located at the base of the brain that supplies blood to the brain and surrounding structures. It is a

component of the cerebral circulation and is comprised of five arteries.The **circle of Willis** also allows blood to flow across the midline of the brain if an artery on one side is occluded. The **circle of Willis** thereby serves a safety valve **function** for the brain, allowing collateral circulation (or flow of blood through an alternate route) to take place if the flow is reduced to one area.

Importance. The **circle of Willis** allows equalization of blood flow between the left and right cerebral hemispheres, and can allow anastomotic circulation if parts are occluded.The **circle of Willis** also allows blood to flow across the midline of the **brain** if an artery on one side is occluded. The **circle of Willis** thereby serves a safety valve function for the **brain**, allowing collateral circulation (or flow of blood through an alternate route) to take place if the flow is reduced to one area.

SPLANCHNIC CIRCULATION: The term 'splanchnic circulation' describes the blood **flow** to the

abdominal gastrointestinal organs including the stomach, liver, spleen, pancreas, **small** intestine, and large intestine. ... The hepatic portal **circulation** delivers the majority of the blood **flow** to the liver.The splanchnic circulation is composed of gastric, small intestinal, colonic, pancreatic, hepatic, and splenic circulations, arranged in parallel with one another. The three major arteries that supply the splanchnic organs, cellac and superior and inferior mesenteric, give rise to smaller arteries that anastomose extensively. The circulation of some splanchnic organs is complicated by the existence of an intramural circulation. Redistribution of total blood flow between intramural vascular circuits may be as important as total blood flow. Numerous extrinsic and intrinsic factors influence the splanchnic circulation.**Splanchnic** is usually used to describe organs in the abdominal cavity. It is used when describing: ... **Splanchnic** organs - including the stomach, small intestine, large intestine, pancreas, spleen, liver, and may also include the

kidney. **Splanchnic** nerves. **Splanchnic** mesoderm.

CORONARY CIRCULATION:
Coronary circulation, part of the systemic circulatory system that supplies blood to and provides drainage from the tissues of the heart. ... Deoxygenated blood is returned to the chambers of the heart via **coronary** veins; most of these converge to form the **coronary** venous sinus, which drains into the right atrium.The heart normally extracts 70 to 75 percent of the available oxygen from the blood in coronary circulation, which is much more than the amount extracted by other organs from their circulations—e.g., 40 percent by resting skeletal muscle and 20 percent by the liver.From the tissue capillaries, the deoxygenated blood returns through a system of veins to the right atrium of the heart. The **coronary arteries** are the only vessels that branch from the ascending aorta. The brachiocephalic, left common carotid, and left subclavian **arteries** branch from the aortic arch.The **Coronary**

Arteries are the blood vessels that supply blood to your heart. They branch off of the aorta at its base. The right **coronary artery**, the left **main coronary**, the left anterior descending, and the left circumflex **artery**, are the four **major coronary arteries**.

- Left coronary artery (LCA) Left anterior descending artery. Left circumflex artery. Posterior descending artery. Ramus or intermediate artery.
- Right coronary artery (RCA) Right marginal artery. Posterior descending artery.
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CUTANEOUS CIRCULATION :Cutaneous Circulation. The **cutaneous circulation** is the **circulation** and blood supply of the **skin**. The **skin** is not a very metabolically active tissue and has relatively **small** energy requirements, so its blood supply is different to that of other tissues.
Functions: To help in the regulation of body temperature
For Nutritive function.. Skin needs very less blood.

DISCUSS THE CARDIOVASCULAR ADJUSTMENTS THAT OCCURS DURING EXERCISE: The three major **adjustments** made by the **cardiovascular** system **during exercise** include one, an increase **in cardiac** output or the pumping capacity of the heart, designed to enhance the delivery of oxygen **and** fuel to the working muscles.**During exercise**, increases in cardiac stroke volume and **heart** rate raise cardiac output, which coupled with a transient **increase** in systemic vascular resistance, elevate mean arterial blood pressure (60). However, long-term **exercise** can promote a net reduction in blood pressure at rest.**During exercise** there is an increase in **physical activity** and muscle cells respire more than they do when the body is at rest. The heart rate increases **during exercise**. The rate and depth of **breathing** increases - this makes sure that more oxygen is absorbed into the blood, and more carbon dioxide is removed from it.
In summary, the **cardiovascular**

effects of static **exercise** include an increased **heart** rate, increased **cardiac** output, increased arterial pressure, and an increased sympathetic drive. There is a greater increase in diastolic, systolic, and mean arterial pressure than that observed with dynamic **exercise**.