**Group (A): (30 min, 24 marks)**

**1. Complete each of the following: (12 marks)**

1. The accessory digestive organs include the three pairs of salivary glands, the liver, the pancreas, and the gallbladder.
2. The cardiovascular system consists of the heart and blood vessels.
3. The respiratory system consists of air passages, which have no exchange activity, and the lung.
4. The kidney distinct into two regions, the outer region called cortex and, the deeper region is called medulla.
5. The peripheral nervous system includes 12 cranial nerves and 31 pairs of spinal nerves.

**2. Mention the functions of the following: (8 marks)**

## **The kidney.**

1. Excretion of metabolic waste products and foreign chemicals.

2. Regulation of water and electrolyte balances.

3. Regulation of body fluid osmolality and electrolyte concentrations.

4. Regulation of arterial pressure.

5. Regulation of acid-base balance.

6. Secretion, metabolism, and excretion of hormones.

7. Gluconeogenesis.

1. **The circulatory system**.

**1. Transportation.** All of the substances essential for cellular metabolism are transported by the circulatory system. These substances can be categorized as follows:

a. Respiratory*.* Red blood cells, or erythrocytes,transport oxygen to the cells. In the lungs, oxygenfrom the inhaled air attaches to hemoglobinmolecules within the erythrocytes and is transportedto the cells for aerobic respiration. Carbon dioxideproduced by cell respiration is carried by the blood to the lungs for elimination in the exhaled air.

b. Nutritive*.* The digestive system is responsible for the mechanical and chemical breakdown of food so that it can be absorbed through the intestinal wall into the blood and lymphatic vessels. The blood then carries these absorbed products of digestion through the liver to the cells of the body.

c. Excretory*.* Metabolic wastes (such as urea), excess water and ions, and other molecules not needed by the body are carried by the blood to the kidneys and excreted in the urine.

**2. Regulation.** The circulatory system contributes to both hormonal and temperature regulation.

a. Hormonal*.* The blood carries hormones from their site of origin to distant target tissues where they perform a variety of regulatory functions.

b. Temperature*.* Temperature regulation is aided by the diversion of blood from deeper to more superficial cutaneous vessels or vice versa. When the ambient temperature is high, diversion of blood from deep to superficial vessels helps cool the body, and when the ambient temperature is low, the diversion of blood from superficial to deeper vessels helps keep the body warm.

**3. Protection.** The circulatory system protects against blood loss from injury and against pathogens, including foreign microbes and toxins introduced into the body.

a. Clotting*.* The clotting mechanism protects against blood loss when vessels are damaged.

b. Immune*.* The immune function of the blood is performed by the leukocytes(white blood cells) that protect against many disease-causing agents (pathogens).

**3. Define each of the following: (4 marks)**

1. **Mastication**: Chewing the food and mixing it with saliva.
2. **Ventilation:** is the mechanical process that moves air into and out of the lungs.