

## PRACTICE WORKSHEET 3: CIRCULATORY SYSTEM AND EXCRETORY SYSTEM | CLASS 5 SCIENCE

### Part A: Multiple Choice Questions

1. What is the function of the valves in the heart?
    - a) To pump blood to the brain
    - b) To regulate oxygen intake
    - c) To prevent the backflow of blood
    - d) To create a heartbeat
  2. What is urea, and how is it removed from the body?
    - a) A type of blood cell, removed through sweat
    - b) A waste product, removed by the lungs
    - c) A waste product, removed by the kidneys
    - d) A nutrient, absorbed by the liver
  3. The walls of which blood vessels are only one cell thick?
    - a) Arteries
    - b) Veins
    - c) Capillaries
    - d) Ureters
  4. Which organ helps regulate the amount of water in the blood?
    - a) Liver
    - b) Lungs
    - c) Kidneys
    - d) Heart
  5. Which of these is a waste product of cellular respiration?
    - a) Glucose
    - b) Carbon dioxide
    - c) Oxygen
    - d) Protein
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### Part B: Fill in the Blanks

1. \_\_\_\_\_ is the liquid part of blood that transports nutrients and waste.
  2. The \_\_\_\_\_ receives oxygen-poor blood from the body.
  3. Kidneys are made up of tiny filtering units called \_\_\_\_\_.
  4. The tube that carries urine from the kidney to the bladder is called the \_\_\_\_\_.
  5. The process by which the heart pumps blood throughout the body is called \_\_\_\_\_.
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### Part C: True or False

1. The left ventricle pumps blood to the lungs for oxygenation. (True/False)
  2. Platelets are responsible for transporting oxygen in the blood. (True/False)
  3. The urinary bladder can stretch to store urine. (True/False)
  4. The circulatory and excretory systems are interconnected. (True/False)
  5. The veins carry blood away from the heart. (True/False)
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### Part D: Short Answer Questions

1. Describe the role of red blood cells in the circulatory system.
  2. Explain why the kidneys are essential for maintaining homeostasis.
  3. What is the difference between the pulmonary and systemic circulation?
  4. How does the excretory system ensure the removal of harmful substances from the body?
  5. Draw a diagram of the kidney and label its main parts (renal artery, renal vein, cortex, medulla, and ureter).
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### Part E: Long Answer Questions

1. **Explain the relationship between the circulatory and excretory systems.** Include how these systems work together to remove waste.
  2. **Describe the journey of blood through the heart.** Include a labeled diagram showing the chambers, valves, and blood vessels involved.
  3. **What happens during filtration in the kidneys?** Describe the role of nephrons in detail with a diagram.
  4. **Why is the circulatory system essential for delivering nutrients and oxygen to cells?** Discuss the importance of capillaries in this process.
  5. **Explain three lifestyle habits to maintain a healthy circulatory and excretory system.** Include reasons for their importance.
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### Answer Key with Detailed Explanations

#### Part A: Multiple Choice Questions

1. c) To prevent the backflow of blood
2. c) A waste product, removed by the kidneys
3. c) Capillaries
4. c) Kidneys
5. b) Carbon dioxide

#### Part B: Fill in the Blanks

1. Plasma
2. Right atrium
3. Nephrons
4. Ureter
5. Circulation

#### Part C: True or False

1. False (The left ventricle pumps oxygenated blood to the body.)
2. False (Platelets help in clotting; red blood cells transport oxygen.)
3. True
4. True
5. False (Veins carry blood to the heart.)

#### Part D: Short Answer Questions

1. **Role of red blood cells:** They carry oxygen from the lungs to all parts of the body using hemoglobin. They also transport carbon dioxide back to the lungs for exhalation.
2. **Kidneys and homeostasis:** The kidneys filter blood to remove waste, regulate water and salt balance, and maintain pH levels, ensuring the body's internal environment remains stable.
3. **Pulmonary vs. systemic circulation:** Pulmonary circulation moves blood between the heart and lungs to exchange oxygen and carbon dioxide. Systemic circulation moves oxygen-rich blood from the heart to the rest of the body and returns oxygen-poor blood to the heart.
4. **Excretory system and waste removal:** The kidneys filter harmful substances like urea and toxins from the blood, converting them into urine. This urine is then stored in the bladder and excreted.
5. **Diagram of the kidney:** (A labeled drawing with the renal artery, renal vein, cortex, medulla, and ureter should be included.)

#### Part E: Long Answer Questions

1. **Circulatory and excretory systems relationship:**  
The circulatory system transports blood containing waste like urea to the kidneys. The excretory system filters this blood, removing waste and maintaining the body's chemical balance.
2. **Journey of blood through the heart:**

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- Blood enters the right atrium → right ventricle → lungs (via pulmonary artery) → oxygenated blood returns to the left atrium → left ventricle → pumped to the body (via aorta).
- **Diagram:** Include labeled chambers, valves, and vessels.
- 3. **Filtration in the kidneys:**
  - Blood enters the kidneys through the renal artery.
  - Nephrons filter blood, retaining useful substances like glucose and water. Waste products are converted into urine and excreted.
  - **Diagram:** Include nephron structure with glomerulus, tubules, and collecting duct.
- 4. **Importance of capillaries:**

Capillaries are thin-walled blood vessels where oxygen and nutrients diffuse into cells, and carbon dioxide and waste are removed. This exchange supports cellular function.
- 5. **Lifestyle habits:**
  - **Healthy diet:** Reduces cholesterol and supports kidney health.
  - **Regular exercise:** Strengthens the heart and improves blood circulation.
  - **Hydration:** Aids in kidney function and prevents kidney stones.