

# Biological Inspiration from Battery Technology

Biology · Answer Key · 10 Questions

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## 1. What is the primary function of systole in the heart?

A) Relaxation and filling

**B) Contraction and pumping**

C) Electrical signaling

D) Valve closure

## 2. Which blood vessel carries oxygenated blood from the left ventricle to the body?

A) Pulmonary artery

B) Vena cava

**C) Aorta**

D) Capillary

## 3. What is the heart's natural pacemaker called?

A) AV node

B) Purkinje fibres

**C) Sinoatrial (SA) node**

D) Atrium

## 4. What is the purpose of the delay at the AV node?

A) To speed up the heart rate

**B) To allow atria to finish emptying**

C) To prevent blood clots

D) To stop the heart from beating

## 5. What kind of cells produce electricity in an electric eel?

A) Neurons

**B) Electrocytes**

C) Muscle fibers

D) Epithelial cells

## 6. Which organ in the electric eel is primarily used for electrolocation?

A) Hunter's organ

B) Main organ

**C) Sachs' organ**

D) Stomach

**7. Which ion is responsible for creating a voltage across the electrocytes?**

- A) Calcium ( $\text{Ca}^{2+}$ )
- B) Potassium ( $\text{K}^{+}$ )
- C) Sodium ( $\text{Na}^{+}$ )**
- D) Magnesium ( $\text{Mg}^{2+}$ )

**8. What protein helps control the ion machinery for high-voltage discharge in eels?**

- A) Hemoglobin
- B) Calmodulin**
- C) Insulin
- D) Keratin

**9. What is the main difference between oxygenated and deoxygenated blood?**

- A) Temperature
- B) Sugar content
- C) Oxygen/ $\text{CO}_2$  levels**
- D) Size of cells

**10. In which direction do Purkinje fibres conduct electrical impulses?**

- A) From ventricles to atria
- B) From the apex upwards**
- C) From the brain to the heart
- D) From the aorta to the lungs