Give Short Answers of the Following Questions

1. What is the main difference between the walls of an artery and a vein?

Ans. **Difference between Walls of an Artery and a Vein:**

Layers of arterial walls	Walls of vein
• The walls of arteries are made up of three layers. (a) **Outer layer:** Tunica externa or adventitia is made of connective and elastic tissue. (b) **Middle layer:** Tunica media is made of thick muscular tissue and elastic fiber. (c) **Inner layer**: Tunica intima is made of thin layer of endothelial cells. • Middle layer is important and it can withstand higher blood pressure during ventricular systole.	• The wall of veins has same three layers as are present in arteries. (d) **Outer layer:** Tunica externa is made of connective and elastic tissue. (e) **Middle layer:** Tunica made is relatively thin and only slightly muscular, with few elastic fibres. (f) **Inner layer:** Tunica intima is made of thin layer of endothelial cells. • Middle layer of veins is relatively thinner than that of arteries because veins do not have to withstand high blood pressure.

2. Enlist the four valves present in heart and also state their locations.

Ans. Four Valves Present in Heart:

- **Tricuspid valve:** Located between the right atrium and right ventricle.
- **Pulmonary valve:** Located between the right ventricle and pulmonary artery.
- **Mitral (bicuspid) valve:** Located between the left atrium and left ventricle.
- **Aortic valve:** Located between the left ventricle and aorta.
- These valves ensure unidirectional blood flow through the heart.

3. State the phases of heartbeat.

Ans. Phases of Heart Beat:

- **Diastole:** Relaxation phase where the heart chambers fill with blood.
- **Atrial systole:** Contraction of the atria to pump blood into the ventricles.
- **Ventricular systole:** Contraction of ventricles to pump blood into the arteries.
- These phases ensure efficient pumping of blood throughout the body.

4. List the principles and uses of Electrocardiogram.

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Ans. Principles and uses of electrocardiogram:

Principles: Measures the electrical activity of the heart through electrodes on the skin.

Uses:

- Diagnosing arrhythmias and conduction disorders.
- Detecting myocardial infarction (heart attack).
- Monitoring heart health during surgery or stress testing.
- Assessing the effects of medications on heart function.

5. Define angiography and angioplasty.

Ans. Angiography and Angioplasty:

Angiography	Angioplasty
• A medical imaging technique that visualizes the inside of blood vessels using contrast dye and x-rays.	• A procedure to widen narrowed or obstructed blood vessels using a balloon catheter. • Angioplasty is often used to treat coronary artery disease.

6. What is meant by Purkinje fibres?

Ans. Purkinje Fibres:

- Purkinje fibers are specialized cardiac conduction fibers.
- They are responsible for rapidly transmitting electrical impulses to the ventricular myocardium.
- This ensures synchronized contraction of the ventricles.
- Purkinje fibers play a crucial role in maintaining a regular heartbeat.

7. What do you mean by vasoconstriction and vasodilation?

Ans. Vasoconstriction and Vasodilation:

Vasoconstriction	Vasodilation
• Narrowing of blood vessels due to contraction of smooth muscle in their walls.	• Widening of blood vessels due to relaxation of smooth muscle. • These processes regulate blood flow and blood pressure.

8. What is the rate of blood flow in different types of blood vessels?

Ans. Rate of Blood Flow:

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- The velocity of blood flow is different in different vessels.
- **Velocity in blood:** It is highest in aorta (450-500mm\sec) and tends to fall along the network of arteries, arterioles and becomes lowest in capillaries (01mm\sec).
- It rises again in venules, veins and vena cavae (250-300mm\sec).
- These changes in the velocity of blood result from changes in the total cr

Highest Velocity___ to ___ Lowest Velocity

Aorta → Artiries → Artrioles → Capieraries

9. State the role of baroreceptors and volume receptors in regulating the blood pressure.

Ans. Role of Baroreceptors:

- **Baroreceptors:** Sense changes in blood pressure and send signals to the brain to adjust heart rate and vascular tone.

Role of volume Receptors:

- **Volume receptors:** Respond to changes in blood volume and influence fluid balance and blood pressure.
- Both play crucial roles in maintaining blood pressure homeostasis.

10. Differentiate between thrombus and embolus.

Ans. Thrombus and Embolus:

Thrombus	Embolus
• A blood clot that forms within a blood vessels	• A clot or other particle that has broken loose and travels through the bloodstream. • An embolus can cause blockage in a distant vessel, leading to serious complications.