

1. Which of the following best defines stroke volume (SV)?
 - A) The volume of blood in the ventricles at the end of diastole
 - **B) The amount of blood ejected by the heart in one contraction**
 - C) The total volume of blood pumped by the heart per minute
 - D) The amount of blood returning to the heart

2. What is the main *formula* for calculating *cardiac output (CO)*?
 - A) $CO = \text{Heart Rate} \times \text{Blood Pressure}$
 - **B) $CO = \text{Stroke Volume} \times \text{Heart Rate}$**
 - C) $CO = \text{Stroke Volume} + \text{Heart Rate}$
 - D) $CO = \text{Preload} \times \text{Afterload}$

3. What does heart *sound S1* indicate?
 - A) Closure of the aortic and pulmonary valves
 - **B) Closure of the mitral and tricuspid valves**
 - C) Opening of the aortic and pulmonary valves
 - D) Ventricular contraction

4. Which *condition* is characterized by *increased afterload*, making the heart work harder to pump blood?
 - A) Ischemia
 - B) Hemorrhage
 - **C) Hypertension**
 - D) Dehydration

5. A ***decreased preload due to dehydration*** would likely result in which of the following?

- A) Increased stroke volume
- **B) Decreased stroke volume**
- C) Increased cardiac output
- D) Decreased heart rate

6. What is a potential consequence of decreased contractility in the heart?

- A) Increased stroke volume
- **B) Decreased cardiac output**
- C) Increased heart rate
- D) Improved perfusion of tissues

Questions on Coronary Artery Disease (CAD)

7. ***Atherosclerosis*** in coronary arteries is primarily characterized by:

- A) Thrombus formation
- **B) Plaque buildup**
- C) Vasodilation
- D) Constriction of blood vessels

8. What is considered a ***non-modifiable*** risk factor for coronary artery disease?

- A) Hypertension
- B) Hyperlipidemia
- **C) Age**
- D) Smoking

9. Which of the following describes the sequence of events in the pathogenesis of atherosclerosis?

- A) Ischemia → Lipid accumulation → Endothelial injury
- **B) Endothelial injury → Lipid accumulation → Inflammation**
- C) Inflammation → Plaque formation → Stenosis
- D) All of the above

10. What is a common *clinical presentation* of a patient with *coronary artery disease*?

- A) Increased LDL levels
- B) Decreased exercise tolerance
- C) Chest pain and shortness of breath
- **D) All of the above**

Questions on Heart Failure

11. *Decreased cardiac output* in heart failure may lead to:

- A) Increased patient energy levels
- B) Volunteering for physical activity
- **C) Insufficient oxygen delivery to tissues**
- D) Accelerated metabolic rate

12. What is a common cause of *increased left ventricular end-diastolic volume (LVEDV)*?

- A) Decreased preload
- B) Reduced heart rate
- **C) Increased blood volume or inadequate heart ejection**

- D) Increased contractility

13. Which classification stage of heart failure represents *end-stage* requiring advanced interventions?

- A) Stage A
- B) Stage B
- C) Stage C
- D) Stage D

14. In which type of heart failure would *jugular venous distention (JVD)* primarily present?

- A) Left heart failure
- B) Right heart failure
- C) Diastolic heart failure
- D) Systolic heart failure

Questions on Heart Valve Disorders

15. Aortic regurgitation results in:

- A) Increased ejection fraction
- B) Volume overload of the left ventricle
- C) Decreased preload
- D) Mitral valve prolapse

16. Physical exam findings in *aortic regurgitation* may include:

- A) Systolic ejection murmur
- B) Diastolic murmur

- C) Aortic stenosis murmur
- D) Continuous murmur

17. **Diuretics** are used in aortic regurgitation management for what primary purpose?

- A) To increase contractility
- B) To reduce fluid overload
- C) To increase preload
- D) To decrease stroke volume

18. Which of the following is a common cause of aortic stenosis?

- A) Degenerative calcification
- B) Rheumatic fever
- C) Bicuspid aortic valve
- D) All of the above

General Management Questions

19. Which surgical intervention is considered definitive for **symptomatic aortic regurgitation**?

- A) Valve repair
- B) Aortic valve replacement
- C) Percutaneous balloon valvuloplasty
- D) Heart transplant

20. What is the recommended approach for **managing asymptomatic** patients with **aortic stenosis**?

- A) Regular echocardiography for monitoring

- B) Immediate surgery
- C) High-dose diuretics
- D) Lifestyle modifications only

21. A classic finding of *aortic stenosis upon physical examination* is:

- A) Systolic murmur at the left sternal border
- B) Diastolic murmur best heard at the apex
- C) Loud, harsh mid-systolic ejection murmur
- D) Continuous murmur

Miscellaneous Questions

22. Which of the following medications would *NOT be indicated* in heart failure management?

- A) Beta-blockers
- B) Calcium channel blockers
- C) ACE inhibitors
- D) Diuretics

23. What is the significance of the *S4 gallop* in a patient with heart failure?

- A) It indicates heart block
- B) It suggests left ventricular hypertrophy
- C) It demonstrates valve regurgitation
- D) It signifies dehydration

24. Which statement is true regarding *compensatory mechanisms in heart failure*?

- A) Increased stroke volume is always achieved
- B) Heart rate typically decreases
- C) Over time, compensatory mechanisms can lead to further heart damage
- D) Only preload is affected by compensatory mechanisms

Additional Advanced Questions

25. What is the effect of chronic hypertension on the left ventricle?

- A) Decreased wall stress
- B) Ventricular dilation
- C) Ventricular hypertrophy
- D) Improved contractility

26. A patient with untreated ***aortic stenosis*** is likely to experience which symptom first?

- A) Palpitations
- B) Exertional dyspnea
- C) Syncope
- D) Pulmonary edema

27. Which of the following factors can ***increase the afterload*** in heart failure?

- A) Systemic vasodilation
- B) Systemic hypertension
- C) Dehydration
- D) Increased heart rate