



**SNS COLLEGE OF ALLIED HEALTH SCIENCE, COIMBATORE -35.**

**(Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai)**

**DEPARTMENT OF CARDIAC TECHNOLOGY**



**PUZZLES FOR THE SUBJECT OF ADVANCED ECG , TMT AND 24 HRS AMBULATORY HOLTER AND BP RECORDINGS**

**Unit-4**

**Multiple Choice Questions on Exercise Physiology, Exercise Protocols, Lead Systems, Patient Preparation, ST Segment Displacement, Non-Electrocardiographic Observations, Exercise Test Indications, Contra-Indications, Precautions, Cardiac Arrhythmias, Conduction Disturbances, and Emergencies in Stress Testing**

1. What is the primary physiological purpose of exercise stress testing?
  - a) To assess respiratory function only
  - b) To evaluate cardiovascular response to physical stress
  - c) To measure muscle strength
  - d) To determine joint flexibility
2. Which exercise protocol is most commonly used for treadmill stress testing?
  - a) Bruce protocol
  - b) Naughton protocol
  - c) Balke protocol
  - d) Astrand protocol
3. How many leads are typically used in a standard 12-lead ECG system during exercise stress testing?
  - a) 6
  - b) 8
  - c) 10
  - d) 12
4. What is a critical step in patient preparation for an exercise stress test?
  - a) Encouraging heavy meals before the test
  - b) Ensuring the patient avoids caffeine and certain medications
  - c) Administering sedatives prior to testing
  - d) Instructing the patient to exercise vigorously beforehand
5. Which type of ST-segment displacement is most indicative of myocardial ischemia during stress testing?
  - a) Upsloping ST depression
  - b) Horizontal or downsloping ST depression
  - c) ST elevation in non-infarct leads
  - d) J-point elevation



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6. How is ST-segment displacement typically measured during an exercise stress test?
  - a) At the peak of the T wave
  - b) 80 ms after the J point
  - c) At the onset of the QRS complex
  - d) During the P wave
7. Which non-electrocardiographic observation is commonly monitored during stress testing?
  - a) Blood glucose levels
  - b) Blood pressure response
  - c) Thyroid function
  - d) Liver enzyme levels
8. What is a primary indication for performing an exercise stress test?
  - a) Routine screening in asymptomatic patients
  - b) Evaluation of chest pain suggestive of coronary artery disease
  - c) Assessment of chronic kidney disease
  - d) Monitoring post-surgical wound healing
9. Which of the following is an absolute contraindication for exercise stress testing?
  - a) Stable angina
  - b) Acute myocardial infarction within 48 hours
  - c) Controlled hypertension
  - d) Mild valvular heart disease
10. What precaution should be taken during stress testing to ensure patient safety?
  - a) Allowing the patient to continue despite severe chest pain
  - b) Monitoring for arrhythmias and stopping the test if necessary
  - c) Encouraging maximal exertion in all patients
  - d) Avoiding ECG monitoring during the test
11. Which cardiac arrhythmia is most concerning during exercise stress testing?
  - a) Sinus tachycardia
  - b) Ventricular tachycardia



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- c) Atrial premature beats
  - d) First-degree AV block
12. What is a common conduction disturbance observed during exercise stress testing?
- a) Left bundle branch block
  - b) Sinus bradycardia
  - c) Atrial flutter
  - d) Normal sinus rhythm
13. Which emergency in the stress testing laboratory requires immediate defibrillation?
- a) Supraventricular tachycardia
  - b) Ventricular fibrillation
  - c) Sinus arrhythmia
  - d) Atrial fibrillation
14. What is the target heart rate typically aimed for during an exercise stress test?
- a) 50% of maximum predicted heart rate
  - b) 85% of maximum predicted heart rate
  - c) 100 beats per minute
  - d) 200 beats per minute
15. Which lead system is most commonly used to detect ischemic changes during stress testing?
- a) Single-lead system
  - b) 3-lead system
  - c) 12-lead system
  - d) Bipolar lead system
16. What is a key component of patient preparation before an exercise stress test?
- a) Shaving chest hair to ensure electrode adhesion
  - b) Administering beta-blockers immediately before the test
  - c) Encouraging smoking to relax the patient
  - d) Providing a high-carbohydrate meal



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17. Which type of ST-segment displacement is least likely to indicate ischemia?
  - a) Horizontal ST depression
  - b) Downsloping ST depression
  - c) Upsloping ST depression
  - d) ST elevation in infarcted territory
18. What is a common non-electrocardiographic symptom to monitor during stress testing?
  - a) Joint pain
  - b) Dyspnea or shortness of breath
  - c) Visual acuity changes
  - d) Skin temperature
19. Which condition is a relative contraindication for exercise stress testing?
  - a) Uncontrolled hypertension
  - b) Recent stroke within 1 month
  - c) Stable chronic heart failure
  - d) Acute pulmonary embolism
20. What is the purpose of the recovery phase in exercise stress testing?
  - a) To increase exercise intensity
  - b) To monitor for post-exercise arrhythmias or ischemia
  - c) To administer medications
  - d) To perform a second stress test
21. Which arrhythmia during stress testing is considered benign in most cases?
  - a) Ventricular tachycardia
  - b) Atrial premature contractions
  - c) Ventricular fibrillation
  - d) Complete heart block
22. What is a common cause of false-positive ST-segment changes during stress testing?
  - a) Hyperkalemia
  - b) Left ventricular hypertrophy



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- c) Acute myocardial infarction
  - d) Coronary artery occlusion
23. Which piece of equipment is essential in the stress testing laboratory for managing emergencies?
- a) Defibrillator
  - b) Blood glucose monitor
  - c) Spirometer
  - d) Ultrasound machine
24. What is the typical duration of the Bruce protocol stages during treadmill stress testing?
- a) 1 minute
  - b) 3 minutes
  - c) 5 minutes
  - d) 10 minutes
25. Which of the following is a key indication for terminating an exercise stress test?
- a) Patient reaching 50% of predicted heart rate
  - b) Development of sustained ventricular tachycardia
  - c) Mild fatigue with no ECG changes
  - d) Normal blood pressure response
26. What is a common non-electrocardiographic observation that may indicate exercise intolerance?
- a) Increased oxygen saturation
  - b) Excessive fatigue or inability to continue
  - c) Stable heart rate
  - d) Normal respiratory rate
27. Which electrolyte imbalance can increase the risk of arrhythmias during stress testing?
- a) Hypernatremia
  - b) Hypokalemia
  - c) Hypercalcemia
  - d) Hypermagnesemia



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28. What is a critical precaution to take during exercise stress testing?
- a) Ensuring the presence of trained personnel and emergency equipment
  - b) Allowing patients to eat during the test
  - c) Ignoring minor ECG changes
  - d) Encouraging maximal exertion in all cases
29. Which conduction disturbance during stress testing may indicate underlying coronary artery disease?
- a) First-degree AV block
  - b) Exercise-induced left bundle branch block
  - c) Sinus arrhythmia
  - d) Normal AV conduction
30. What is the immediate response to a patient experiencing cardiac arrest in the stress testing laboratory?
- a) Administer beta-blockers
  - b) Initiate cardiopulmonary resuscitation (CPR) and defibrillation
  - c) Continue the exercise test
  - d) Monitor without intervention