CARDIO A&P
FINAL EXAM

Study Guide and Practice Questions
Disclaimer:

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You can get access to our massive bank of TMC Practice Questions by Clicking Here. 😊
Why hello there!

Thank you so much for downloading this study guide! In this book, you will find a ton of helpful practice questions, all, of course, covering the topic of — Cardiopulmonary Anatomy and Physiology.

These questions are designed to help you prepare for the Cardio A&P final exam in Respiratory Therapy School.

Hopefully, by going through these practice questions, you will be able to boost your knowledge to a whole new level and ace your final exam.

This is definitely one of the most important subjects in Respiratory Therapy School. Not to mention, it’s also the topic that many students struggle with.

With that being said, (hopefully) this study guide, along with the resources on our website and YouTube channel can help.

So if you’re ready, let’s go ahead and get started.

Good luck! 😊
1. As the respiratory therapist, you have given supplemental oxygen to a patient with pneumonia. What would cause the patient to be hypoxemic?
   1. Diffusion defect
   2. Capillary shunting
   3. Alveolar consolidation
   4. Hypoventilation
   A. 1 and 2
   B. 2 and 3
   C. 1 and 3
   D. all of the above

2. When auscultating over an area of pneumonia, what breath sound can be expected?
   A. hyperresonance
   B. wheezing
   C. bronchial
   D. vesicular

3. A patient has been admitted to the emergency department with the following arterial blood gas results:
   pH 7.50
   PaCO2 30 torr
   PaO2 85 torr
   HCO3- 24 mEq/L
   The physician asks the respiratory therapist what the results show. The therapist should interpret the results as
   A. metabolic alkalosis.
   B. respiratory acidosis.
   C. metabolic acidosis.
   D. respiratory alkalosis.

4. A respiratory therapist enters the room of a patient with congestive heart failure (CHF) who has recently become febrile and tachycardic. The patient is very weak and apathetic and faints upon sitting up. The therapist then calls for the nurse. After the therapist ensures that the patient has regained
consciousness, he recommends that an electrolyte panel be ordered. Upon analysis of the patient's electrolyte levels, the therapist should expect to find that the patient is

A. hyponatremic.
B. hypernatremic.
C. hypokalemic.
D. hypercalcemic.

5. The respiratory therapist is evaluating the record of an adult patient. A note in the record indicates that the chest radiograph shows the level of the diaphragm just below the 10th rib. This finding is consistent with

A. amyotrophic lateral sclerosis.
B. a normal finding.
C. hyperinflation.
D. hypoinflation

6. The respiratory therapist is reviewing the record of a patient for whom an arterial blood gas test has been ordered. In order to properly prepare for the arterial puncture, which of the following lab values is most critical to review?

A. bilirubin
B. serum sodium
C. prothrombin time
D. alkaline phosphatase

7. Clinical lab evaluations of a patient with known allergic reactions would most likely reveal

A. decreased basophils.
B. increased eosinophils.
C. decreased eosinophils.
D. decreased neutrophils.

8. A patient's complete blood count (CBC) shows that the white blood count (WBC) is twice the high end of the normal range. This indicates:

A. leukopenia.
9. An elderly patient with a history of very significant emphysema presents to the emergency department (ED) with shortness of breath. The ED physician asks the respiratory therapist which value in the patient's ABG analysis would be most reflective of the severity of the patient's pulmonary disease. The therapist's response should be:
   A. PaCO2
   B. pH
   C. HCO3-
   D. PaO2

10. The respiratory therapist reviews the patient's electrocardiogram (ECG) tracing and notes ST segment depression. This finding most strongly indicates:
    A. a decreased sodium level.
    B. respiratory acidosis.
    C. an elevated potassium level.
    D. cardiac ischemia.

11. Which type of epithelial tissue is found lining the heart, blood vessels and lymphatic vessels?
    A. Simple squamous epithelium
    B. Simple cuboidal epithelium
    C. Stratified squamous epithelium
    D. Stratified cuboidal epithelium

12. Which of the following types of tissues is responsible for pumping blood throughout the body?
    A. skeletal muscle
    B. smooth muscle
    C. cardiac muscle
    D. intercalated cells
13. Which of the following is NOT one of the main tissue types found in the human body?
   A. epithelial
   B. connective
   C. myocardial
   D. muscle

14. Which of the following is not one of the three main factors influencing blood pressure?
   A. cardiac output
   B. peripheral resistance
   C. emotional state
   D. blood volume

15. Which statement best describes arteries?
   A. All carry oxygenated blood to the heart.
   B. All carry blood away from the heart.
   C. All contain valves to prevent the backflow of blood.
   D. Only large arteries are lined with endothelium.

16. Permitting the exchange of nutrients and gases between the blood and tissue cells is the primary function of ______.
   A. arterioles
   B. arteries
   C. veins
   D. capillaries

17. The pulse pressure is ______.
   A. systolic pressure plus diastolic pressure
   B. systolic pressure minus diastolic pressure
   C. systolic pressure divided by diastolic pressure
   D. diastolic pressure plus 1/3 (systolic pressure plus diastolic pressure)

18. Blood flow to the skin ______.
   A. is controlled mainly by decreasing pH
   B. increases when environmental temperature rises
C. increases when body temperature drops so that the skin does not freeze
D. is not an important source of nutrients and oxygen for skin cells

19. Which of the choices below does not involve tissue perfusion?
   A. delivery of oxygen and nutrients to, and removal of wastes from, tissue cells
   B. gas exchange in the lungs
   C. absorption of nutrients from the digestive tract
   D. blood clotting

20. The arteries that directly feed into the capillary beds are called ________.
   A. muscular arteries
   B. elastic arteries
   C. arterioles
   D. venules

21. Select the correct statement about factors that influence blood pressure.
   A. An increase in cardiac output corresponds to a decrease in blood pressure, due to the increased delivery.
   B. Systemic vasodilation would increase blood pressure, due to diversion of blood to essential areas.
   C. Excess protein production would decrease blood pressure.
   D. Excess red cell production would cause a blood pressure increase

22. Where in the body would you find low oxygen levels causing vasoconstriction and high levels causing vasodilation?
   A. kidney
   B. lungs
   C. liver
   D. heart
23. Which of the following blood pressure readings would be indicative of hypertension?
   A. 120/80 in a 30-year-old man
   B. 140/90 in a 70-year-old woman
   C. 170/96 in a 50-year-old man
   D. 110/60 in a 20-year-old woman

24. When the body cannot get enough oxygen, it makes ATP via:
   A. aerobic metabolism
   B. anaerobic metabolism
   C. digestion
   D. lacrimation

25. After inhaled air goes through the larynx, the NEXT part of the respiratory system the air passes through as it moves to the lungs is the:
   A. bronchus
   B. larynx
   C. epiglottis
   D. trachea

26. The chamber that pumps oxygen-rich blood out of the heart for distribution to the rest of the body is the:
   A. right atrium
   B. right ventricle
   C. left atrium
   D. left ventricle

27. The largest artery in the body is the:
   A. aorta
   B. pulmonary
   C. carotid
   D. femoral

28. The component of the blood that has a primary function of carrying oxygen tissue is:
   A. red blood cells
B. plasma  
C. white blood cells  
D. platelets

29. The pressure created in the arteries when blood is forced out of the heart is referred to as:
   A. radial  
   B. systolic  
   C. femoral  
   D. diastolic

30. The substance that regulates acidity and is produced by the kidneys is called:
    A. chyme  
    B. bicarbonate  
    C. blood  
    D. testosterone

31. Electrical signals called _____ travel along the plasma membrane of a neuron and stimulate the release of chemicals called _____ that are then used to communicate with other cells.
    A. action potentials; neurotransmitters  
    B. action potentials; hormones  
    C. action potentials; cytokines  
    D. threshold potentials; cytokines

32. Which of the following describes the effect of end-diastolic volume on stroke volume?
    A. A decrease in end-diastolic volume creates a vacuum drawing more blood into the ventricle increasing stroke volume.  
    B. An increase in end-diastolic volume stretches ventricular muscle cells to lengths greater that optimum, decreasing stroke volume.
C. A decrease in end-diastolic volume allows cardiac muscle to relax, conserving energy for the next contraction, thereby increasing stroke volume of that next contraction.
D. An increase in end-diastolic volume stretches ventricular muscle cells to lengths closer to optimum, increasing the strength of contraction and thereby increasing stroke volume.

33. The period of ventricular contraction is called __________, whereas the period of ventricular relaxation is called_________.
   A. action potential: refractory period
   B. action potential: graded potential
   C. systole: diastole
   D. V fib: A fib

34. Which of the following components of an ECG represent ventricular repolarization?
   A. P wave
   B. QRS complex
   C. T wave
   D. PQ interval

35. Which of the following factors determines preload?
   A. peripheral resistance and tension
   B. end-diastolic volume and end-systolic volume
   C. parasympathetic activity of the ventricles
   D. heart rate and venous return

36. An increase in venous return would result in a(n)
   A. increased end-systolic volume.
   B. increased end-diastolic volume.
   C. decreased end-systolic volume.
   D. increase mid-systolic volume.

37. Cardiac output is determined by what two variable?
   A. end-diastolic volume and end-systolic volume
   B. preload and afterload
38. Blood is ejected from the left ventricle once pressure within the
   A. ventricle is greater than pressure within the aorta.
   B. ventricle is less that pressure within the aorta.
   C. ventricle is greater that pressure within the pulmonary artery.
   D. ventricle is less than pressure within the pulmonary artery.

39. What two major regions of the heart contain a concentration of pacemaker cells?
   A. sinoatrial node and bundle of His
   B. sinoatrial node and atrioventricular node
   C. sinoatrial node and Purkinje fibers
   D. bundle of His and Purkinje fibers

40. The T-Q segment is the time from the end of the T wave to the beginning of the QRS complex which measures the time
    A. of atrial systole.
    B. between heartbeats.
    C. of ventricular systole.
    D. of ventricular diastole.

41. Which of the following is the correct conduction pathway through the heart?
    A. AV node, SA node, AV bundle, bundle branches, Purkinje fibers
    B. SA node, AV node, bundle branches, AV bundle, Purkinje fibers
    C. SA node, AV node, AV bundle, bundle branches, Purkinje fibers
    D. Purkinje fibers, AV bundle, bundle branches, SA node, AV node
42. In what phase is the cardiac cycle when AV valves are open and semilunar valves are closed?
   A. atrial contraction
   B. ventricular filling
   C. isovolumetric contraction
   D. ventricular ejection

43. The volume of blood that is pumped by the heart every minute is determined by the equation
   A. EF = EDV - ESV
   B. CO = HR x SV
   C. MAP = CO x TPR
   D. SV = EDV - ESV

44. During which phase of the cardiac cycle are all four heart valves open?
   A. isovolumetric contraction
   B. isovolumetric relaxation
   C. ventricular filling
   D. none of the above

45. The high compliance of veins allows them to
   A. rapidly change central venous pressure with small changes in blood volume.
   B. act as pressure reservoirs
   C. provide driving force for the movement of blood through the vasculature during diastole.
   D. accommodate large volumes of blood with little change in pressure.

46. An increase in heart rate can be mediated through which of the following?
   A. a decrease in parasympathetic nervous activity only
   B. a decrease in sympathetic activity only
   C. an increase in parasympathetic activity and a decrease in sympathetic activity
47. The long-term regulation of arterial blood pressure involves the:
   A. release of hormones over a period of minutes
   B. stimulation of an increase in urine flow through the kidneys
   C. control of peripheral resistance
   D. control of blood volume by the kidneys

48. Mean arterial pressure can be increased by all of the following EXCEPT:
   A. decreasing end-diastolic volume
   B. increasing venous return
   C. increasing sympathetic activity
   D. increasing blood volume

49. Poiseuille’s Law states that at a constant driving pressure, the flow rate of liquid through a capillary tube is directly proportional to the ____ power of the radius of the tube and inversely proportional to the length and viscosity of the tube
   A. Second
   B. Sixth
   C. Third
   D. Fourth

50. Which of the following does not apply to arterioles?
   A. Participate in regulation of arterial blood pressure
   B. Act as pressure reservoirs for maintaining blood flow during ventricular relaxation
   C. Major sites of resistance to flow
   D. Responsible for regulating the pattern of blood flow distribution to the various organs

51. Acetylcholine causes ____ of bronchioles via ____ receptors.
   A. Dilation; Beta 2
B. Dilation; Muscarinic cholinergic  
C. Constriction; Beta 2  
D. Constriction; Muscarinic cholinergic

52. The air conduction pathways  
   A. Warm and humidify air  
   B. Increase air pressure  
   C. Decrease air pressure  
   D. Participate in gas exchange

53. Gas exchange between air and blood occurs in  
   A. Alveoli  
   B. Body tissues  
   C. Bronchi  
   D. Trachea

54. Albuterol, an asthma medication, dilates bronchioles by mimicking the effects of epinephrine on _____ receptors in smooth muscle.  
   A. Nicotinic cholinergic  
   B. Muscarinic cholinergic  
   C. alpha1 adrenergic  
   D. beta2 adrenergic

55. When the diaphragm contracts, the intrapulmonary pressure decreases relative to atmospheric pressure, resulting in:  
   A. Inspiration  
   B.Expiration  
   C. Forced Expiration  
   D. Forced Inspiration

56. When inflated, alveoli have relatively______, which aids in expiration.  
   A. High surface tension  
   B. Low surface tension  
   C. High pressure  
   D. Low elasticity
57. In pulmonary edema, the build-up of fluid in the interstitium of the lungs inhibits gas diffusion because:
   A. The distance is increased
   B. The distance is decreased
   C. The alveoli break down
   D. The lungs explode

58. What happens to the oxygen-hemoglobin dissociation curve as blood passes through tissues with a very low metabolic rate?
   A. Shift to the right - increased affinity for oxygen
   B. Shift to the right - decreased affinity for oxygen
   C. Shift to the left - increased affinity for oxygen
   D. Shift to the left - decreased affinity for oxygen

59. The dorsal respiratory group (DRG) located in the _____ functions to _____.
   A. Pons; Generate the respiratory rhythm
   B. Medulla; Terminate the respiratory rhythm
   C. Pons; Terminate the respiratory rhythm
   D. Medulla; Generate the respiratory rhythm

60. Respiratory alkalosis may be caused by
   A. Hyperventilation
   B. Chronic vomiting
   C. Emphysema
   D. Diet

61. In a typical capillary bed (in most tissues), reabsorption occurs at the _____ end and ultrafiltration occurs at the _____ end.
   A. Venous; Venous
   B. Arterial; Venous
   C. Venous; Arterial
   D. Arterial; Arterial

62. Which is true about capillary exchange in Bowman's capsule?
A. Glomerular capillaries filter out all of the components of plasma
B. Glomerular capillaries filter out many components of plasma that are smaller than proteins
C. Glomerular capillaries filter out all of the components of plasma and reabsorb them on the venous side
D. Glomerular capillaries filter out many components of plasma that are smaller than proteins and reabsorb them on the venous side

63. Which is the correct order of fluid movement through the nephron?
A. Afferent arteriole, Glomerulus, Loop of Henle, PCT, DCT, CD
B. Efferent arteriole, Bowman's capsule, PCT, Loop of Henle, DCT, CD
C. Bowman's capsule, Glomerulus, PCT, Loop of Henle, DCT, CD
D. Afferent arteriole, Glomerulus, Bowman's capsule, PCT, Loop of Henle, DCT, CD

64. Diuretic agents are used to treat hypertension because they:
A. Increase blood volume
B. Increase heart rate
C. Decrease blood volume
D. Decrease heart rate

65. The majority of reabsorption occurs at the:
A. Proximal convoluted tubule
B. Loop of Henle
C. Collecting duct
D. Distal convoluted tubule

66. What type of agent blocks the Na+/Cl- transporter in the nephron?
A. Loop diuretic
B. Aldosterone antagonist
C. Thiazide
D. ADH antagonist

67. **ECGs are used to:**
   - A. Monitor the electrical events in cardiac conduction
   - B. Measure the force of contraction generated by the ventricles
   - C. Detect the Mean Arterial Pressure
   - D. Measure stroke volume and cardiac output

68. **Which is a major cause of arrhythmias?**
   - A. Heart attack
   - B. Stress
   - C. Drugs
   - D. All of the above

69. **The P-wave on an ECG represents**
   - A. Atrial flutter
   - B. Ventricular repolarization
   - C. Ventricular depolarization
   - D. Atrial depolarization

70. **Tachycardia can result from activation of which receptor?**
    - A. alpha-1 adrenergic
    - B. B1 adrenergic
    - C. alpha-2 adrenergic
    - D. Muscarinic cholinergic

71. **In atrial flutter, the atria contract so quickly that**
    - A. Ventricular filling is compromised
    - B. The heart stops
    - C. There is no heart rate
    - D. Life is not possible

72. **Arteries carry blood ____ the heart and ____ the tissues.**
    - A. Towards; Towards
    - B. Towards; Away from
    - C. Away from; Towards
D. Away from; Away from

73. Veins carry blood ____ the heart and ____ the tissues.
   A. Towards; Away from
   B. Towards; Towards
   C. Away from; Towards
   D. Away from; Away from

74. When blood pressure drops, baroreceptors signal the brainstem to increase sympathetic output resulting in all of the following EXCEPT:
   A. Vasoconstriction
   B. Increased contractility of the heart
   C. Venoconstriction
   D. Decrease in heart rate

75. Bronchodilation is mediation by ____ receptors in the lung and ____.
   A. Muscarinic cholinergic; Acetylcholine
   B. Beta-2 adrenergic; Epinephrine
   C. Alpha-1 adrenergic; Norepinephrine
   D. Nicotinic cholinergic; Acetylcholine
So there you have it! Wow, you made it all the way to the end — that’s impressive!

By doing so, that lets me know that you have what it takes to become a successful Respiratory Therapist.

You’re definitely on the right track, so keep working and studying hard and you’ll be just fine.

And not to worry — we’re going to be with you every step of the way along your journey.

Thanks again for reading through this study guide! If you thought that these questions were helpful, you should definitely consider checking out our TMC Test Bank.

It’s a MASSIVE bank of practice questions that are designed to teach you everything you need to know in order to pass the TMC Exam.

It comes in PDF format (like this book) and also has helpful audio and videos as well.

Not to brag or anything, but it’s already successfully helped thousands of students pass the TMC Exam!

Are you next??

It’s never too early to start preparing for the exam!

And going through practice questions is one of the most effective strategies that students are using to pass the exam.

That’s why our TMC Test Bank is so effective.
So if you’re interested, just click the link below to learn more.

[Image of TMC Test Bank]

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Breathe easy, my friend! 🙏

Johnny Lung

Johnny Lung RRT
One more thing!

How would you like to get new TMC Practice Questions sent to your inbox every single day?

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As I mentioned before, going through practice questions is one of the most effective strategies when it comes to passing the TMC Exam.

Well now, you can get new practice questions delivered straight to your inbox on a daily basis.

This way, over time, you can master every single topic that you need to know to increase your chances of passing the exam on your first (or next) attempt.

Let’s go through an example so that you can see what I’m talking about.

Here’s an example of a TMC Practice Question:

A new patient just finished a cardiothoracic surgery procedure. Upon assessment, you noticed that the patient has a paradoxical pulse. Which of the following conditions is most likely?

A. Pericarditis
B. COPD exacerbation
C. Myocardial infarction
D. Cardiac tamponade

Do you know the answer? Not to worry, let’s break it down!
The explanation that you get along with each practice question is the most important part!

To get this one right, first, you have to know exactly what is a paradoxical pulse.

A paradoxical pulse, aka pulsus paradoxus, is when the pulse or blood pressure varies or changes during inhalation and exhalation. It is most often seen during a tension pneumothorax or cardiac tamponade and often occurs when the patient has a flail chest.

Cardiac tamponade is an accumulation of fluid within the pericardial sac. One of the most common side effects of cardiac tamponade is a paradoxical pulse.

So on the TMC Exam, if you get a question where the patient has a chest trauma injury, be sure to remember that a pneumothorax, flail chest, cardiac tamponade, and thus pulsus paradoxus may occur.

None of the other answer choices make sense in this situation, so we know that the correct answer has to be D.

**The correct answer is:** D. Cardiac tamponade

Well, what did you think? Do you see how valuable this information can be??

Are you ready to start receiving these practice questions and explanations every day?

If so, just click on the link below


