MECHANICAL VENTILATION
FINAL EXAM

Study Guide and Practice Questions
**Disclaimer:**

Medicine and respiratory therapy are continuously changing practices. The author and publisher have reviewed all information in this report with resources believed to be reliable and accurate and have made every effort to provide information that is up to date with the best practices at the time of publication. Despite our best efforts we cannot disregard the possibility of human error and continual changes in best practices the author, publisher, and any other party involved in the production of this work can warrant that the information contained herein is complete or fully accurate. The author, publisher, and all other parties involved in this work disclaim all responsibility from any errors contained within this work and from the results from the use of this information. Readers are encouraged to check all information in this book with institutional guidelines, other sources, and up to date information. Respiratory Therapy Zone is not affiliated with the NBRC, AARC, or any other group at the time of this publication.

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 — Mechanical Ventilation.

These questions are designed to help you prepare for the Mechanical Ventilation 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 Mechanical Ventilation final exam.

Mechanical Ventilation is definitely one of the most important subjects in Respiratory Therapy School. Not to mention, it’s also the topic that most 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. Which of the following is an indicator of weaning failure?
   A. Decreasing VD/VT
   B. Increasing MIP
   C. Increasing f/VT
   D. Decreasing f

2. Based on the weaning protocol described in the textbook, all of the following conditions must be met for consideration of a weaning attempt except:
   A. Hemodynamic stability
   B. Little or no sedation required
   C. PaO2/FIO2
   D. Presence of inspiratory effort

3. Terminal weaning is defined as ____________ of mechanical ventilation that results in the ____________ of a patient.
   A. Withdrawal; death
   B. Withholding; death
   C. Withdrawal; vegetative state
   D. Withholding; vegetative state

4. Other causes of increased airflow resistance during mechanical ventilation include all of the following conditions except:
   A. Kinking of the ET tube
   B. Secretions in ET tube
   C. Use of a humidifier
   D. Use of an HME

5. All of the following pulmonary measurements suggest readiness for weaning attempt except:
   A. Maximal inspiratory pressure = -12 cm H2O
   B. VD/VT = 40%
   C. Static compliance = 32 mL/cm H2O
   D. f/VT = 80 breaths/min/L
6. If pulse oximetry is used to monitor a patient’s oxygenation status, the pulse oximetry O2 saturation (SpO2) should be kept in the mid-80s for allowance of machine inaccuracies.
   A. True  
   B. False

7. The ____ is measured by dividing the patient's tidal volume (measured at the airway opening) by the difference in the plateau pressure and the PEEP.
   A. Airway resistance
   B. Static lung compliance
   C. Deadspace to tidal volume ratio
   D. Dynamic lung compliance

8. Patients who fail the SBT often do so within the first 10 minutes of the trial.
   A. True  
   B. False

9. _______ is an indicator of weaning failure.
   A. Increasing PaO2
   B. Increasing PaCO2
   C. Increasing SpO2
   D. Increasing PaO2/FIO2

10. Patients who fail the spontaneous breathing trial (SBT) may exhibit which of the following clinical signs and symptoms. Select all that apply.
    A. Agitation
    B. Cyanosis
    C. Diaphoresis
    D. All of the above

11. ____ remains an effective tool in altering the degree of partial ventilatory support during continuous mechanical ventilation.
    A. ATC
    B. CPAP
12. Generally accepted ventilatory weaning criteria includes a ____.
   A. Vital capacity of greater than 5 mL/kg
   B. Minute ventilation of less than 15 L with satisfactory blood gases
   C. Spontaneous VT of greater than 5 mL/kg
   D. PaCO2 of less than 65 mm Hg with normal pH

13. For a successful weaning outcome, ____.
   A. The PaO2 should be > 75 mm Hg
   B. The P(A-a)O2 should be < 450 mm Hg while on 100% O2.
   C. The PaO2/FIO2 should be 150 mm Hg
   D. The QS/QT should be < 45%

14. While assessing a 64 year-old patient receiving volume controlled ventilation, you note that the peak airway pressure has decreased from 52 cm H2O to 32 cm H2O. There have been no other changes to the ventilator settings. Which of the following actions would be appropriate at this time?
   A. Increase the volume setting until the pressure equals 52 cm H2O
   B. Increase the flow setting until the pressure equals 52 cm H2O
   C. Check for increased secretions and suction if needed
   D. Check the circuit for system leaks

15. The ____ is used to estimate how much pulmonary perfusion is wasted.
   A. P/F index
   B. QS/QT ratio
   C. P(A-a)O2 gradient
   D. CaO2 content
16. Which of the following patient conditions is the least important consideration prior to weaning a patient from mechanical ventilation?
   A. Frequent arrhythmias
   B. Severe acidosis
   C. Ventilatory failure
   D. Use of PEEP

17. The blood gases and related parameters of a patient are as follows: pH = 7.43, PaCO2 = 40 mm Hg, PaO2 = 80 mm Hg, PECO2 = 30 mm Hg. What portion of the tidal volume is considered wasted (deadspace) ventilation?
   A. 15%
   B. 25%
   C. 50%
   D. 75%

18. A patient has the following oxygen content measurements: CcO2 = 20 vol%, CaO2 = 18 vol%, CvO2 = 13 vol%. The calculated QS/QT is about _______ and it reflects ___________ shunting.
   A. 19%; mild
   B. 29%; significant
   C. 39%; severe
   D. 55%; severe

19. ___ is defined as an absence of ventilatory support 48 hours following an extubation.
   A. Weaning success
   B. Weaning in progress
   C. Weaning failure
   D. Spontaneous breathing trial

20. Which of the following are included in a weaning protocol:
    A. The detailed process of weaning
    B. The evaluation of weaning outcomes
    C. The patient condition in which weaning may be attempted
21. Automatic tube compensation (ATC) allows the patient to have a breathing pattern as if breathing spontaneously without an artificial airway.
   A. True
   B. False

22. When the RSBI or f/VT ratio becomes greater than 100 breaths/min/L, it correlates with weaning failure.
   A. True
   B. False

23. ____ is a clinical condition that decreases static compliance.
   A. Kinking of ET tube
   B. Bronchospasm
   C. Airway obstruction
   D. Tension pneumothorax

24. ____ is a clinical condition that decreases dynamic compliance.
   A. Atelectasis
   B. ARDS
   C. Retained secretions in the airways
   D. Retained secretions in the lungs

25. ____ = PAO2 – PaO2
   A. QS/QT
   B. P(A-a)O2
   C. CaO2
   D. PaCO2

26. A patient has the following measurements while receiving mechanical ventilation: exhaled VT = 480 mL, PIP = 45 cm H2O, plateau pressure = 30 cm H2O, PEEP = 8 cm H2O. What is the calculated static compliance? Is it normal based on the pulmonary measurement criteria for weaning?
   A. 11 mL/cm H2O; normal
B. 11 mL/cm H2O; abnormal
C. 22 mL/cm H2O; normal
D. 22 mL/cm H2O; abnormal

27. Respiratory muscle dysfunction may be due to all of the following conditions except:
   A. Electrolyte imbalance
   B. Excessive nutritional intake
   C. Low oxygen delivery
   D. Respiratory muscle atrophy due to muscle disuse

28. Patients who fail an SBT often exhibit the following objective clinical signs: tachypnea, ____, hypertension, hypotension, hypoxemia or acidosis, arrhythmias.
   A. Bradycardia
   B. Tachycardia
   C. Atrial fibrillation
   D. Ventricular fibrillation

29. Termination criteria for weaning from mechanical ventilation includes a ____.
   A. SpO2 < 80%
   B. heart rate >120/min
   C. systolic pressure >180 mm Hg
   D. systolic pressure < 75 mm Hg

30. Sometimes SIMV and ____ are used together in patients who have failed the spontaneous breathing trial.
   A. PSV
   B. VS
   C. VAPS
   D. APRV

31. In ____, the pressure support level is adjusted automatically to achieve the target tidal volume.
   A. VS
   B. VAPS
32. For a successful weaning outcome, the patient should have a
   A. static lung compliance
   B. VC
   C. VD/VT ratio should be >60%
   D. MIP of at least –30 cm H2O

33. A patient is being mechanically ventilated at an FiO2 of 100%. As a precautionary measure, you would monitor and limit its use to __________ as lung damage can occur with prolonged exposure.
   A. 6-12 hours
   B. 12-24 hours
   C. 24-48 hours
   D. 48-72 hours

34. For adult patients during HFOV, the power is initially set at _____ and rapidly increased to achieve chest wiggle. Chest wiggle is defined as visible vibration from _________________.
   A. 4; shoulder to belly area
   B. 4; shoulder to mid-thigh area
   C. 6; shoulder to belly area
   D. 6; shoulder to mid-thigh area

35. While monitoring the ventilator, you notice that the pressure gauge goes from 0 cm H2O and then goes up and stays at 8 cm H2O throughout the expiratory phase. Since PEEP is not in use, this observation is called:
   A. CPAP
   B. Air leak
   C. Auto-PEEP
   D. COPD
36. An intubated patient is being treated with a broad-spectrum antibiotic. The physician would like to do a C&S sputum test. Since the patient’s cough is not strong enough to expectorate the retained secretions, you would collect the sputum sample in a _______________.
   A. Laryngeal mask airway
   B. Esophageal obturator
   C. Suction catheter
   D. Lukens trap

37. Alveolar hyperventilation is usually accompanied by a PaCO2 reading of ___________ and this may be managed by _______ the mechanical VT or RR.
   A. > 45 mm Hg; increasing
   B. > 45 mm Hg; decreasing
   C. < 35 mm Hg; increasing
   D. < 35 mm Hg; decreasing

38. Upon entering Mr. Pendleton’s room you notice that the high pressure alarm has been triggered since your last visit. It is no longer alarming. You should consider which of the following as the most likely cause?
   A. Atelectasis
   B. Bronchospasm
   C. Coughing
   D. Mucus plug

39. Incentive spirometry is ordered for a female patient after abdominal surgery. Which of the following statements would be the most appropriate initial explanation of the therapy?
   A. “Your doctor has ordered this therapy to prevent atelectasis.”
   B. “We are trying to improve your lung volume”
   C. “This therapy will help you take deep breaths and expand your lungs”
   D. “You may experience pain and lightheadedness from this therapy”
40. A patient is being mechanically ventilated. Among other settings, PEEP-10 cm H2O and FiO2-70% are used. After determining the patient has met the weaning criteria, you would begin the weaning process by decreasing the:
   A. FiO2 gradually to 40%
   B. FiO2 gradually while simultaneously increasing the PEEP
   C. PEEP gradually to 3 cm H2O
   D. PEEP gradually while simultaneously increasing the FiO2

41. A medical resident asks you to explain the difference between CPAP and PEEP. You would describe that CPAP provides an end-expiratory pressure to patients who are:
   A. On pressure control mode
   B. Breathing spontaneously with mechanical breaths
   C. On SIMV mode
   D. Breathing spontaneously without mechanical breaths

42. Airway resistance imposed by the ventilator circuit and ETT can be minimized or overcome during spontaneous breathing by:
   A. Adding deadspace
   B. Increasing inspiratory flow
   C. Using PSV
   D. All of the above

43. Among the conditions below, auto-PEEP is most likely caused by ____________ while on the ventilator.
   A. Air trapping
   B. Excessive inspiratory flow
   C. Insufficient tidal volume
   D. Low frequency

44. Mrs. McFarland, a patient with a history of COPD, has been admitted for elective surgery. Her preoperative ABGs on room air would most likely show:
   A. pH = 7.16, PaCO2 = 34 mm Hg, PaO2 = 64 mm Hg
   B. pH = 7.45, PaCO2 = 44 mm Hg, PaO2 = 65 mm Hg
C. pH = 7.37, PaCO2 = 54 mm Hg, PaO2 = 60 mm Hg
D. pH = 7.48, PaCO2 = 54 mm Hg, PaO2 = 58 mm Hg

45. The initial frequency during HFOV is set at _______ Hz and may be ___________ if using amplitude alone fails to control the PaCO2.
   A. 5-6; decreased
   B. 5-6; increased
   C. 10-15; decreased
   D. 10-15; increased

46. Inverse ratio ventilation (IRV) is accomplished mainly by:
   A. Decreasing the VT
   B. Increasing the inspiratory flow rate
   C. Extending the inspiratory time
   D. Decreasing the PIP

47. In HFOV, the mean airway pressure (mPaw) is affected by the __________ and the initial mPaw should start at __________ the mPaw obtained during conventional mechanical ventilation.
   A. Power setting; 5 cm H2O
   B. Power setting; 15 cm H2O
   C. Frequency; 5 cm H2O
   D. Frequency; 15 cm H2O

48. The physician asks you to assess a patient for excessive extracellular fluid. Among other signs, you would evaluate all of the following conditions except:
   A. Bounding pulse
   B. Increased cardiac output
   C. Oliguria
   D. Pulmonary edema

49. Permissive hypercapnia is a strategy in which the _______ value is allowed to go beyond its normal limit and it is used to _______.
A. PaO2; reduce intracranial pressure in patients with head injuries
B. PaO2; reduce O2 toxicity
C. PaCO2; minimize ventilator-related lung injuries
D. PaCO2; compensate for metabolic alkalosis

50. Mr. Jones, a patient who has been mechanically ventilated for 3 weeks, is now on a high calorie diet. Which of the following can be a potential problem associated with overfeeding during mechanical ventilation?
A. Decreased O2 consumption
B. Decreased work of breathing
C. Increased CO2 production
D. Increased fixed acid

51. In HFOV, the power setting controls the amplitude of oscillation and thus the:
A. Frequency
B. Oxygenation level
C. Tidal volume
D. A and B only

52. Dr. Kao asks you to estimate a patient's resting energy expenditure (REE) using the Harris Benedict equation. You would gather the following set of information:
A. Age, height, & weight
B. Height & weight
C. Sex, height, & weight
D. Sex, age, height, & weight

53. The incidence of VAP may be reduced by employing all of the following procedures except:
A. Proper handwashing
B. More frequent ventilator circuit change
C. Early microbiological exam and use of appropriate antibiotherapy
D. Closed suction system
54. When an MDI is administered inline to a mechanically ventilated patient with a HME:
   A. MDI may not be used inline with a ventilator circuit
   B. The MDI must be placed between the patient and the HME
   C. The MDI must be placed between the ventilator and the HME
   D. The HME must be removed

55. The degree of ventilation is best assessed by measuring the patient’s:
   A. PaCO2
   B. PaO2
   C. pH
   D. PvCO2

56. In high frequency oscillatory ventilation (HFOV), hypoventilation may be managed by __________ the amplitude or by __________ frequency.
   A. Increasing; increasing
   B. Increasing; decreasing
   C. Decreasing; increasing
   D. Decreasing; decreasing

57. In patients with normal cardiopulmonary status, increasing the ________ is the treatment of choice in improving the patient’s oxygenation.
   A. FiO2
   B. PEEP
   C. PSV
   D. VT

58. In mechanical ventilation, the most common approach to improving minute ventilation is to increase the __________. However it should not exceed _____ as auto-PEEP may occur.
   A. Respiratory rate; 10/min
   B. Respiratory rate; 20/min
C. Tidal volume; 600 mL
D. Tidal volume; 800 mL

59. The major cation in the intracellular fluid (ICF) is:
   A. Sodium
   B. Calcium
   C. Potassium
   D. Magnesium

60. An order has been written for initiating MV at a VT setting of 3 mL/kg. You would contact the physician and explain to her that the VT setting would be too _______ and it may lead to _______.
   A. High; barotrauma
   B. High; alveolar hyperventilation
   C. Low; atelectasis
   D. Low; bronchospasm

61. You are reviewing ABG results of a 30-year-old, postoperative patient who has been on assist/control (a/c) ventilation and is currently awake and breathing spontaneously. The results are as follows: pH = 7.53, PaCO2 = 30 mm Hg, PaO2 = 102 mm Hg, HCO3 = 24 mEq/L, a/c rate = 12/min, total rate = 18/min, tidal volume = 800 ml, FiO2 = 30%. Based on the information provided, you would make which of the following changes to the ventilator setting?
   A. Change to SIMV mode
   B. Decrease a/c rate to 10/min
   C. Decrease FiO2 to 25%
   D. Increase the tidal volume to 850 ml

62. In humans, water makes up approximately ______ of the total body weight.
   A. 40%
   B. 50%
   C. 60%
   D. 70%
63. Mr. Johns is being mechanically ventilated with these settings: Mode = SIMV, rate = 12/min, tidal volume = 600 mL, FiO2 = 50%, PEEP = 0 cm H2O. Auto-PEEP of 6 cm H2O is observed consistently. You would change the:
   A. Frequency to 14/min
   B. Mode to assist control
   C. PEEP to 5 cm H2O
   D. Tidal volume to 700 mL

64. Upon entering the ICU, you are alerted by a series of low pressure alarms from the ventilator. You would check the patient and ventilator for all of the following conditions except:
   A. Circuit disconnection
   B. Airway obstruction
   C. ETT cuff leak
   D. Loose humidifier connection

65. Auto-PEEP may be reduced or eliminated by all of the following methods except:
   A. Increasing the expiratory time
   B. Reducing the VT
   C. Reducing the frequency
   D. Reducing the inspiratory flow

66. The ABG report of Mr. Orin, a patient on mechanical ventilation, is as follows: pH = 7.50, PaCO2 = 32 mm Hg, PaO2 = 83 mm Hg. The physician asks you to make appropriate changes to the settings on the ventilator. Which of the following controls would have the least impact in correcting the patient’s condition as indicated by the ABG results?
   A. FiO2
   B. PS level
   C. RR
   D. VT

67. The total rate of a mechanically ventilated patient is 10/min. At this rate, the ABG reveals a PaCO2 of 60 mm Hg. Assuming
the VT and deadspace remain constant, calculate the RR necessary to achieve a PaCO2 of 40 mm Hg.

A. 6/min
B. 8/min
C. 12/min
D. 15/min

68. All of the following statements are true regarding mechanical tidal volume except:
A. Increasing the tidal volume is the most common approach to improving minute ventilation.
B. Tidal volume should be set according to the patient’s ideal body weight.
C. Increasing the tidal volume should be considered when the patient’s ventilatory rate exceeds an ideal breathing pattern.
D. Insufficient tidal volume increases the risk of atelectasis and hypercapnia.

69. The most common trigger for apnea alarms is:
A. Apnea
B. Loose humidifier fitting
C. Cuff leak
D. Disconnection

70. The following electrolytes are collected from a patient with severe sepsis who has been on a mechanical ventilator for two weeks. Which of the following electrolytes is out of its normal range?
A. Sodium = 138 mEq/L
B. Potassium = 1.5 mEq/L
C. Chloride = 105 mEq/L
D. Bicarbonate = 25 mEq/L

71. The degree of ventilation may be increased by increasing all of the following ventilator parameters except:
A. VT
B. PEEP
72. The major cation in the extracellular fluid compartment is ______ and it plays an important role in ________ balance.
   A. Sodium; fluid
   B. Potassium; fluid
   C. Calcium; acid-base
   D. Magnesium; acid-base

73. Low VT strategy is done to reduce the risk of ___________ and the target volume is reached when _____________.
   A. Atelectasis; PIP is
   B. Atelectasis; plateau pressure is
   C. Barotraumas; PIP is
   D. Barotraumas; plateau pressure is

74. The PaCO2 of Ms. Hart, a 40-year-old mechanically ventilated dependent patient with normal cardiopulmonary status, is 60 mm Hg. This value indicates ____________ and should be managed by ____________ the mechanical VT or RR.
   A. hyperventilation; increasing
   B. hyperventilation; decreasing
   C. hypoventilation; increasing
   D. hypoventilation; decreasing

75. All of the following could be the cause of a patient’s peak pressure increasing from 35 to 45 cm H2O except:
   A. Bronchospasm
   B. Resolving pulmonary edema
   C. The patient biting on the endotracheal tube. Secretions in the airway
   D. Secretions in the airway

76. The pressure required to maintain alveolar inflation is known as which of the following?
   A. Transairway pressure (PTA)
B. Transthoracic pressure (PTT)
C. Transrespiratory pressure (PTR)
D. Transpulmonary pressure (PL)

77. The term used to describe the tendency of a structure to return to its original form after being stretched or acted on by an outside force is which of the following?
   A. Elastance
   B. Compliance
   C. Viscous resistance
   D. Distending pressure

78. The condition that causes pulmonary compliance to increase is which of the following?
   A. Asthma
   B. Kyphoscoliosis
   C. Emphysema
   D. Acute respiratory distress syndrome (ARDS)

79. Use this figure to compute the static compliance (CS) for an intubated patient with an exhaled tidal volume (VT) of 500 mL.
   A. 14 mL/cm H2O
   B. 20 mL/cm H2O
   C. 33 mL/cm H2O
   D. 50 mL/cm H2O

80. The ventilator that functions most physiologically uses which of the following?
   A. Open loop
   B. Double circuit
   C. Positive pressure
   D. Negative pressure

81. Plateau pressure (Pplateau) is measured during which phase of the ventilatory cycle?
   A. Inspiration
   B. End-inspiration
C. Expiration
D. End-expiration

82. Calculate airway resistance (Raw) for a ventilator patient, in cm H2O/L/sec, with the following information: Peak inspiratory pressure (PIP) is 20 cm H2O, plateau pressure (Pplateau) is 15 cm H2O, PEEP is 5 cm H2O, and set flow rate is 50 L/min.
   A. 5 Raw
   B. 6 Raw
   C. 10 Raw
   D. 15 Raw

83. Calculate the static compliance (CS), in mL/cm H2O, when PIP is 47 cm H2O, plateau pressure (Pplateau) is 27 cm H2O, baseline pressure is 10 cm H2O, and exhaled tidal volume (VT) is 725 mL.
   A. 43 CS
   B. 36 CS
   C. 20 CS
   D. 0.065 CS

84. Air accidentally trapped in the lungs due to mechanical ventilation is known as which of the following?
   A. Plateau pressure (Pplateau)
   B. Functional residual capacity (FRC)
   C. Extrinsic positive end expiratory pressure (extrinsic PEEP)
   D. Intrinsic positive end expiratory pressure (intrinsic PEEP)

85. A blood gas report done on a neonate shows a PaCO2 of 58 mm Hg. The physician asks the therapist to increase the tidal volume via pressure-controlled ventilation. The therapist should increase the:
   A. Expiratory time
   B. Peak inspiratory pressure
   C. Positive end-expiratory pressure
   D. Tidal volume
86. The respiratory therapist enters modes and parameters into the ventilator with which of the following?
   A. Control logic
   B. Input power
   C. User interface
   D. Drive mechanism

87. The function of the exhalation valve is to do which of the following?
   A. Adjust the flow going to the patient
   B. Close during exhalation to vent patient gas
   C. Seal the external circuit during inspiration
   D. Determine the volume being delivered

88. In the image, what does “B” represent?
   A. Expiratory valve line
   B. Exhalation valve
   C. Expiratory line
   D. Main inspiratory line

89. There are two types of pneumatically powered ventilators: pneumatic and fluidic
   A. True
   B. False

90. Closed-loop ventilator logic systems are called “unintelligent” because they cannot be programmed to respond to changing conditions.
   A. True
   B. False

91. Modern ICU ventilators use flow control valves. These valves control or direct gas flow by opening or closing either completely or in small increments.
   A. True
   B. False
92. The power source used by the ventilator provides the energy to perform the work of ventilating the patient. Ventilator power sources include:
   A. Electrical
   B. Pneumatic
   C. Dual electrical-pneumatic
   D. All of the above

93. Early ventilators such as the tank ventilator and chest cuirass were designed to operate as:
   A. Positive pressure ventilators
   B. Negative pressure ventilators
   C. Constant pressure ventilators
   D. Volume-cycled ventilators

94. The equation of motion describes the relationships between which of the following?
   A. Pressure and flow during a mechanical breath
   B. Pressure and volume during a spontaneous breath
   C. Flow and volume during a mechanical or spontaneous breath
   D. Flow, volume, and pressure during a spontaneous or mechanical breath

95. How many variables can a ventilator control at one time?
   A. One
   B. Two
   C. Three
   D. Four

96. An increase in airway resistance during volume-controlled ventilation will have which of the following effects?
   A. Volume increase
   B. Flow decrease
   C. Pressure increase
   D. Rate decrease
97. An increase in airway resistance during pressure-targeted ventilation will have which of the following effects?
   A. Volume decrease
   B. Flow increase
   C. Pressure increase
   D. Rate decrease

98. The most commonly used patient-trigger variables include which of the following?:
   I. Flow
   II. Time
   III. Pressure
   IV. Volume
   A. I and III only
   B. II and IV only
   C. I and IV only
   D. II and III only

99. A patient who has been sedated and paralyzed by medication is being controlled by the ventilator. The set rate is 15 bpm. How many seconds does it take for inspiration and expiration to occur?
   A. 2 seconds
   B. 4 seconds
   C. 6 seconds
   D. 8 seconds

100. The trigger variable in the controlled mode is which of the following?
   A. Flow
   B. Time
   C. Pressure
   D. Volume

101. The inspiratory and expiratory flow sensors are reading a base flow of 5 liters per minute (L/min). The flow trigger is set to 2
L/min. The expiratory flow sensor must read what flow to trigger inspiration?
  A. 1 L/min
  B. 2 L/min
  C. 3 L/min
  D. 4 L/min

102. The patient trigger that requires the least amount of work of breathing for the patient is which of the following?
  A. Time
  B. Flow
  C. Pressure
  D. Volume

103. The limit variable set on a mechanical ventilator will do which of the following?
  A. End inspiration
  B. Begin inspiration
  C. Control the maximum value allowed
  D. Control the minimum value allowed

104. The variable that a ventilator uses to end inspiration is known as which of the following?
  A. Cycle
  B. Limit
  C. Trigger
  D. Baseline

105. The most common method of terminating inspiration during pressure support ventilation is which of the following?
  A. Flow
  B. Time
  C. Pressure
  D. Volume

106. The general indications for mechanical ventilation include all of the following except:
A. Acute alveolar hyperventilation
B. Acute hypoxemia (PaO2)
C. Acute respiratory acidosis
D. Apnea

107. Which maneuver will maintain air in the lungs at the end of inspiration, before the exhalation valve opens?
   A. Pressure limit
   B. Inspiratory hold
   C. Expiratory hold
   D. Expiratory resistance

108. A ventilator is set to deliver a 600 mL tidal volume. The flow rate is set at 40 L/min and the frequency is set at 10 breaths/min. If the flow rate is doubled and the patient is not assisting, which of the following will occur?
   A. The frequency will decrease.
   B. The tidal volume will increase.
   C. The expiratory time will increase.
   D. The inspiratory time will increase.

109. A patient with an opiate drug overdose is unconscious and has the following arterial blood gas results on room air: pH 7.20; partial pressure of carbon dioxide (PaCO2) 88 mm Hg; partial pressure of oxygen (PaO2) 42 mm Hg; bicarbonate (HCO3-) 25 mEq/L. Which of the following best describes this patient’s condition?
   A. Chronic hypoxemic respiratory failure
   B. Chronic hypercapnic respiratory failure
   C. Acute hypoxemic respiratory failure
   D. Acute hypercapnic respiratory failure

110. A patient with inadequate oxygenation of the brain may display which of the following conditions?:
   I. Confusion
   II. Excitement
   III. Somnolence
   IV. Compliance
111. Which of the following values are indicative of acute respiratory failure and the need for ventilatory support?:
   I. Maximum inspiratory pressure (MIP) = – 25 cm H2O
   II. Dead space to tidal volume ratio (VD/VT) = 0.4
   III. Vital capacity (VC) = 8 mL/kg IBW
   IV. pH = 7.20
   A. I and II only
   B. II and III only
   C. III and IV only
   D. I and IV only

112. A 46-year-old male presents to the emergency department with a chief complaint of shortness of breath. Physical assessment reveals: pulse 102, blood pressure 138/80, respiratory rate 25 with accessory muscle use, and breath sounds are decreased with bilateral inspiratory and expiratory wheezing with a prolonged expiratory phase. The peak expiratory flow rate is 100 L/min. The immediate action by the respiratory therapist should include which of the following?
   A. Intubate and mechanically ventilate
   B. Administer oxygen via non-rebreather mask
   C. Administer continuous bronchodilator therapy
   D. Initiate noninvasive positive pressure ventilation

113. Which of the following patients is showing the signs of acute respiratory distress?
   A. One who is in a semi-Fowler position, watching TV, with a 2 L/min nasal cannula
   B. One in the high Fowler position, diaphoretic, anxious and unable to complete a sentence
   C. One who is leaning forward on a table, using accessory muscles, and pursed-lip breathing
D. One in the high Fowler position, with a 2 L/min nasal cannula, eating breakfast

114. The underlying physiological process leading to pure hypercapnic respiratory failure is which of the following?
   A. Ventilation/perfusion mismatch
   B. Intrapulmonary shunting
   C. Diffusion impairment
   D. Alveolar hypoventilation

115. Which of the following are conditions affecting the central nervous system that is associated with reduced drive to breathe?
   A. General anesthesia
   B. Stroke
   C. Narcotics
   D. All of the above

116. A patient has recently been diagnosed with obstructive sleep apnea. The most appropriate treatment includes which of the following?
   A. Pressure Support Ventilation (PSV)
   B. Noninvasive Positive Pressure Ventilation (NPPV)
   C. Continuous Positive Airway Pressure (CPAP)
   D. Pressure Controlled Continuous Mandatory Ventilation (PC-CMV)

117. Which of the following is the minimum ventilator rate that is considered full ventilatory support?
   A. 4 breaths/minute
   B. 6 breaths/minute
   C. 8 breaths/minute
   D. 10 breaths/minute

118. Partial ventilatory support can be provided by which of the following ventilator modes?:

I. Pressure Controlled Continuous Mandatory Ventilation (PC-CMV) set rate 8 breaths/minute
II. Volume Controlled Synchronized Intermittent Mandatory Ventilation (VC-SIMV) set rate 4 breaths/minute
III. Pressure Controlled Synchronized Intermittent Mandatory Ventilation (PC-SIMV) set rate 10 breaths/minute
IV. VC-MMV set Ve8 L/minute
A. I and II only
B. II and III only
C. II and IV only
D. III and IV only

119. Of the following breath descriptions, which one is considered spontaneous?
A. Flow triggered, pressure limited, flow cycled
B. Time triggered, volume limited, volume cycled
C. Pressure triggered, pressure limited, time cycled
D. Patient triggered, patient cycled, baseline pressure +5 cm H2O

120. What type of breath occurs when the ventilator controls the timing, tidal volume, or inspiratory pressure?
A. Assisted
B. Mandatory
C. Spontaneous
D. Controlled

121. An assisted breath in PC-CMV mode can be described by which of the following?
A. Time triggered, pressure limited, time cycled
B. Patient triggered, pressure limited, time cycled
C. Time triggered, pressure limited, pressure cycled
D. Patient triggered, volume limited, volume cycled

122. Full ventilatory support is provided by which of the following modes?
A. Pressure Support Ventilation (PSV) with Continuous Positive Airway Pressure (CPAP)  
B. Volume Support Ventilation (VSV) with Continuous Positive Airway Pressure (CPAP)  
C. Volume-Controlled Synchronized Intermittent Mandatory Ventilation (VC-SIMV) rate 6 with pressure support (PS)  
D. Pressure-Controlled Synchronized Intermittent Mandatory Ventilation (PC-SIMV) rate 12 with pressure support (PS)  

123. When a patient does not breathe spontaneously while in the airway pressure release ventilation (APRV) mode, the pressure-time scalar looks like that of which of the following?  
A. Pressure Support Ventilation (PSV)  
B. Continuous Positive Airway Pressure (CPAP)  
C. Pressure-Controlled Inverse Ratio Ventilation (PCIRV)  
D. Volume-Controlled Continuous Mandatory Ventilation (VC-CMV)  

124. A breath that is patient triggered, pressure targeted, and time cycled is which of the following?  
A. Assisted breath  
B. Mandatory breath  
C. Spontaneous breath  
D. Synchronized breath  

125. A patient triggered, pressure limited, flow cycled breath describes which of the following?  
A. Spontaneous breath  
B. Pressure-support breath  
C. Volume-control breath  
D. Pressure-control breath  

126. The ventilator mode that delivers pressure breaths that are patient- or time-triggered, volume targeted, time cycled, and where the pressure is automatically adjusted to maintain delivery of the targeted volume is which of the following?  
A. Volume Support Ventilation (VSV
B. Pressure Augmentation (Paug)
C. MMV
D. Pressure Regulated Volume Control (PRVC)

127. If the tube does not have a vocal cord marking, a rule to estimate the depth of intubation is to add the number ____ to the body weight in kilograms (kg).
   A. 4
   B. 5
   C. 6
   D. 7

128. Which of the following has a suggested starting ventilation of 20 to 30 cm H2O under low compliance conditions?
   A. PIP
   B. PEEP
   C. Flow rate
   D. Tidal volume

129. A neonate who is diagnosed with severe RDS has been deteriorating over the past 12 hours. The physician asks a therapist to evaluate this neonate for possible ECMO therapy. The therapist should recommend the neonate for ECMO therapy if she:
   A. Has a gestational age of more than 34 weeks.
   B. Has been mechanically ventilated for more than 2 weeks
   C. Has evidence of intracranial hemorrhage (ICH)
   D. Weighs less than 2,000 g

130. Other indications of ET intubation may include all of the following except:
   A. Administration of oxygen
   B. Collection of tracheal specimens
   C. Mechanical ventilation
   D. Removal of secretions
131. The most common cause of respiratory distress syndrome in newborns is:
   A. Congenital heart disease
   B. Low body weight
   C. Oxygen toxicity
   D. Surfactant deficiency

132. Intubation of the neonates following delivery is indicated under all of the following conditions except:
   A. Apgar score greater than 8
   B. Difficulty ventilating by bag and mask
   C. Meconium staining of amniotic fluid
   D. Presence of diaphragmatic hernia

133. The ability of HFOV to oxygenate the blood is not as good as with other methods.
   A. True
   B. False

134. Which of the following is not a primary function of mechanical ventilation?
   A. Correction of metabolic acidosis
   B. Oxygenation
   C. Removal of carbon dioxide
   D. Support ventilation failure

135. Candidates for HFOV may exhibit all of the following clinical conditions with the exception of:
   A. Chest radiograph consistent with diffuse, homogeneous lung disease
   B. Difficulty to wean from conventional ventilation
   C. Increasing ventilation requirement
   D. Rapidly increasing FiO2 requirement

136. For neonates below 1,000 g body weight, the proper size laryngoscope blade should be size ______ and ETT size _____ (internal diameter, mm).
   A. 0; 2.5
B. 0; 3.0  
C. 1; 2.5  
D. 1; 3.0  

137. Because of the potential risks associated with ECMO, the clinical criteria used selects only those infants who are at an 80% or greater risk of mortality if conventional methods are used.  
A. True  
B. False  

138. Patients with ____ are excluded from consideration of ECMO.  
A. ICH  
B. PPHN  
C. Sepsis  
D. MAS  

139. Ideally, the temperature of the gas at the ____ should be 37 °C with a water content of 44 mg/L.  
A. Epiglottis  
B. Vocal cords  
C. Esophagus  
D. Trachea  

140. Which of the following is not a purpose of a conventional ventilator when used in tandem with HFJV?  
A. It provides a continuous gas flow for entrainment by HFJV  
B. It provides pressure support ventilation  
C. Its sigh breaths prevent microatelectasis  
D. Its sigh breaths stimulate production of surfactant  

141. Neonatal ventilator circuits should have a high compression factor.  
A. True  
B. False
142. Early studies involving ____ showed that adequate ventilation occurred even when tidal volumes far below deadspace were used.
   A. HFV
   B. PCV
   C. Dual-control ventilation
   D. APRV

143. HFJV is used:
   A. After conventional ventilation has failed
   B. For premies with meconium aspiration
   C. In tandem with conventional mechanical ventilation
   D. To provide intrapulmonary percussion

144. During mechanical ventilation, some of the ventilator volume is “lost” within the circuit and humidifier and is not delivered to the patient. This wasted volume is called the ____.
   A. Expansion volume
   B. Compressible volume
   C. Compression factor
   D. Compliant factor

145. A(n) ____ of 35 to 50 mm Hg for 2 to 12 hours indicates a need for ECMO therapy.
   A. P(A-a)O2
   B. PaO2
   C. OI
   D. mPaw

146. Approximately 90% of surfactant is phospholipid, with ____ comprising 85% of the total amount.
   A. Dipalmitoyl phosphatidylcholine
   B. Phosphatidylcholine
   C. Phosphatidylglycerol
   D. Phosphatidylinosito
147. High frequency ventilation has the advantage of delivering _________ and reducing the incidence of ____________.
A. Large mean airway pressure; necrotizing tracheobronchitis
B. Large tidal volume; barotrauma
C. Low peak inspiratory pressure; air trapping
D. Small tidal volume; barotrauma

148. Which of the following statements is true concerning the venovenous route in ECMO therapy?
A. Blood is removed from the right atrium via the right carotid artery
B. Blood is removed from the right atrium via the femoral vein
C. Blood is returned to the aortic arch via the internal jugular vein
D. Blood is returned to the right atrium via the femoral vein

149. During high frequency jet ventilation (HFJV) or high frequency oscillatory ventilation (HFOV), assessment of a patient's cardiopulmonary status is difficult. Signs of deterioration may include all of the following except:
A. Hypotension
B. Pallor
C. Respiratory distress
D. Tachycardia

150. Which of the following statements is true concerning the venoarterial route in ECMO therapy?
A. Blood is removed from the brachial or femoral artery
B. Blood is removed from the right common carotid artery
C. Blood is returned to the aortic arch via the internal jugular vein
D. Blood is returned to the aortic arch via the right common carotid artery
151. To prevent premature shutdown (power off) of the heated wire, the temperature probe should be placed:
   A. At the ETT adapter
   B. Inside the expiratory tubing
   C. Inside the incubator
   D. Outside the inlet to the incubator

152. The indications for using HFJV include severe pulmonary disease that is complicated by all of the following except:
   A. Air leaks
   B. Pulmonary hypoplasia.
   C. Pulmonary hypotension
   D. Restrictive lung disease

153. In addition to an Apgar score of 3 or less obtained immediately after delivery, intubation of a neonate should be considered in all of the following conditions except:
   A. ETT administration of epinephrine or surfactant is indicated
   B. Ineffective bag/mask ventilation
   C. Premature rupture of amniotic membrane
   D. Presence of thick meconium on delivery

154. Selection of an ETT for neonates is based on the ____ or gestational age of the neonate.
   A. Birth length
   B. Chest circumference
   C. Neck circumference
   D. Birth weight

155. Recent publications have reported that N-CPAP is both feasible and effective in most very-low-birth-weight infants and those with acute respiratory failure.
   A. True
   B. False
156. Since the tidal volume (VT) control is not available when using pressure-controlled ventilation, an estimated VT can be calculated by multiplying the inspiratory time (I time) and ____.
   A. PIP  
   B. I:E Ratio  
   C. Flow rate  
   D. FIO2

157. During ________ controlled ventilation, the ventilator delivers a variable ____________ depending on a patient's lung compliance or airflow resistance.
   A. pressure-; flow  
   B. pressure-; volume  
   C. volume-; flow  
   D. volume-; pressure

158. Therapeutic or rescue administration of surfactant is indicated in infants with all of the following signs except:
   A. Ground glass appearance on chest x-ray  
   B. Hyperventilation  
   C. Progressive hypoxemia  
   D. Respiratory distress syndrome

159. During pressure-controlled ventilation, a lower tidal volume would result when the patient's compliance is ________ or airflow resistance is ____________.
   A. Decreased; decreased  
   B. Decreased; increased  
   C. Increased; decreased  
   D. Increased; increased

160. A unique feature of the HFOV is that it produces extremely rapid ______ cycles.
   A. Inspiratory  
   B. Expiratory  
   C. Inspiratory and expiratory
An infant has the following measurements: mean airway pressure = 25 cm H2O, PaO2 = 45 mm Hg at an FiO2 of 60%. What is the calculated oxygen index (OI)?
A. 15  
B. 27  
C. 33  
D. 52

Based on the indications for prophylactic use of surfactant, the following condition must be met:
A. Birth weight less than 1250 g  
B. Gestational age at or less than 26 weeks  
C. PaO2/PAO2 less than 0.22  
D. All of the answers are correct

_____ has potential applications for use in several diseases that traditionally have been difficult to treat such as RDS, aspiration syndromes, persistent pulmonary hypertension of the newborn, and pneumonia.
A. Machine volume  
B. Liquid ventilation  
C. Volume guarantee  
D. HFV

The blood gas values of a normal umbilical artery sample include all of the following except:
A. PaCO2 from 35-45 mm Hg  
B. PaO2 greater than 50 mm Hg  
C. pH from 7.30-7.45  
D. SaO2 from 60%-90%

A randomized trial comparing two surfactants, those obtained from mammalian lungs and those that are synthetically produced, found an advantage in using synthetic surfactant.
A. True
B. False

166. A preterm infant has a diagnosis of respiratory distress syndrome. The therapist should expect to read in the chart that the neonate showed all of the following signs except:
   A. Apnea
   B. Chest retraction
   C. Expiratory grunting
   D. Nasal flaring

167. A neonate is being ventilated by HFOV. Her physician would like to lower the patient's PaCO2. The therapist should increase the level of ventilation by ________ or ________.
   A. Decreasing the power (amplitude); decreasing the frequency (Hz)
   B. Decreasing the power (amplitude); increasing the frequency (Hz)
   C. Increasing the power (amplitude); decreasing the frequency (Hz)
   D. Increasing the power (amplitude); increasing the frequency (Hz)

168. The tidal volumes delivered by pressure-controlled ventilation are dependent on the:
   A. Airflow resistance
   B. Patient's lung compliance
   C. Pressure setting
   D. All the answers are correct

169. Which of the following common surfactants has a recommended dosage of 4 mL/kg every 6 hours up to 4 total doses in the first 48 hours?
   A. Infasurf®
   B. Survanta®
   C. Exosurf®
   D. Curosurf®
170. In addition to the FiO2 control on a HFOV, a patient’s oxygenation status can be improved by increasing the:
   A. Amplitude
   B. Frequency
   C. Mean airway pressure
   D. Power

171. HFPPV is delivered at frequencies between ____ cycles per minute.
   A. 40 to 60
   B. 60 to 150
   C. 240 to 660
   D. 480 to 1800

172. CPAP reduces V/Q mismatch by improving ____ and reducing intrapulmonary shunting.
   A. Minute ventilation
   B. Respiratory frequency
   C. Functional residual capacity
   D. Gas exchange

173. The indications for using ____ include severe pulmonary disease that is complicated by air leaks, such as pulmonary interstitial emphysema (PIE), pulmonary hypoplasia, restrictive lung disease, and persistent pulmonary hypertension.
   A. PRVC
   B. HFOV
   C. MV
   D. HFJV

174. The power setting of HFOV determines all of the following parameters except:
   A. Amplitude of oscillation
   B. Degree of ventilation
   C. Inspiratory time
   D. Tidal volume
175. A 54-year-old female patient is receiving ventilatory support in the volume control mode. After performing endotracheal suctioning, which of the following would indicate effective clearance of retained secretions?
   A. A decreased inspiratory time
   B. A smaller tidal volume
   C. A lower plateau pressure
   D. A lower peak pressure
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.

Click Here to Get Access to the TMC Test Bank

Breathe easy, my friend! 🙏

Johnny Lung RRT
One more thing!

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

If this is something that sounds interesting to you, Click Here to learn more.

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 54-year-old female patient is receiving ventilatory support in the volume control mode. After performing endotracheal suctioning, which of the following would indicate effective clearance of retained secretions?

A. A decreased inspiratory time
B. A smaller tidal volume
C. A lower plateau pressure
D. A lower peak pressure
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, you have to know that retained secretions increases the airway resistance and peak airway pressures during volume control ventilation.

So in order to fix the issue, you have to remove the secretions via suctioning, which will decrease the peak airway pressure.

On the other hand, if the patient was in the pressure control mode, you would expect to see an increase in the delivered volume once the secretions are cleared.

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

**The correct answer is:** D. A lower peak pressure

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

[Click Here to Get Daily TMC Practice Questions](#)


