

**STUDY GUIDE**  
**for**  
**Airway Management and Ventilation**

1. Which of the following is a responsibility of the nasal cavity?
  - a. filter incoming air
  - b. humidify incoming air
  - c. warm incoming air
  - d. all of the above
  
2. What purpose do the conchae serve?
  - a. secrete mucus into the nasal cavity
  - b. propel foreign particles into the pharynx
  - c. cause air flow turbulence
  - d. stimulate the cilia
  
3. The muscular tube that extends from the back of the soft palate to the esophagus is the
  - a. trachea
  - b. larynx
  - c. pharynx
  - d. eustachian tube
  
4. A leaf-shaped cartilage that prevents food from entering the larynx during swallowing is the
  - a. arytenoid
  - b. cricoid
  - c. epiglottis
  - d. hyoid
  
5. The depression between the epiglottis and the base of the tongue is the
  - a. eustachian tube
  - b. vallecula
  - c. hyoid
  - d. pyriform fossa
  
6. The narrowest part of the adult upper airway is at the level of the
  - a. vocal cords
  - b. cricoid cartilage
  - c. cricothyroid membrane
  - d. hyoid bone
  
7. The space between the vocal cords is known as the

- a. eustachian tube
  - b. hyoid process
  - c. cricothyroid membrane
  - d. glottis
8. The trachea divides into the right and left mainstem bronchi at the
- a. hyoid bone
  - b. carina
  - c. vallecula
  - d. parenchyma
9. An endotracheal tube inserted too far will most likely rest in the
- a. right mainstem bronchus
  - b. left mainstem bronchus
  - c. lung parenchyma
  - d. carina
10. Most gas exchange occurs in the
- a. respiratory bronchioles
  - b. alveoli
  - c. alveolar ducts
  - d. bronchioles
11. The \_\_\_\_\_ pleura covers the lungs.
- a. visceral
  - b. parietal
  - c. pulmonary
  - d. respiratory
12. During inspiration, air enters the lungs because of a/an \_\_\_\_\_ in intrathoracic pressure.
- a. increase
  - b. decrease
13. The lungs receive deoxygenated blood from the
- a. right heart
  - b. left heart
  - c. pulmonary veins
  - d. bronchial arteries
14. The normal PaO<sub>2</sub> for a healthy adult breathing room air is \_\_\_\_\_ torr.
- a. 60

- b. 80-100
  - c. 35-45
  - d. 40
15. The normal PaCO<sub>2</sub> for a health adult breathing room air is \_\_\_\_\_.
- a. 60-80
  - b. 80-100
  - c. 35-45
  - d. 7.35-7.45
16. Oxygen molecules move from the alveoli into the pulmonary capillary because of a process known as
- a. osmosis
  - b. ventilation/perfusion mismatch
  - c. atelectasis
  - d. diffusion
17. 97% of the oxygen that enters the bloodstream
- a. is dissolved in plasma
  - b. binds with hemoglobin
  - c. is transported as bicarbonate
  - d. is exhaled into the atmosphere
18. In which of the following cases would the oxygen saturation and partial pressure be high yet the patient die of hypoxia?
- a. carbon monoxide poisoning
  - b. hypothermia
  - c. hypovolemia
  - d. all of the above
19. Which of the following conditions might cause a ventilation/perfusion mismatch?
- a. pneumothorax
  - b. hemothorax
  - c. pulmonary embolism
  - d. all of the above
20. The FiO<sub>2</sub> of room air is
- a. 80-100 torr
  - b. 21%
  - c. 100%

- d. 40 torr
21. When it enters the bloodstream, the majority of carbon dioxide
- a. is dissolved in plasma
  - b. binds with hemoglobin
  - c. is transported as bicarbonate
  - d. combines with carbon monoxide
22. Which of the following would not increase a patient's PaCO<sub>2</sub>?
- a. hyperventilation
  - b. hypoventilation
  - c. airway obstruction
  - d. muscle exertion
23. The main respiratory center lies in the
- a. apneustic center
  - b. pneumotaxic center
  - c. stretch receptors
  - d. medulla
24. The Hering-Breuer Reflex is a process that
- a. ensures rhythmic inspiration
  - b. monitors for changes in PaCO<sub>2</sub>
  - c. prevents overinflation of the lungs
  - d. controls hypoxic drive
25. Chemoreceptors are stimulated by which of the following
- a. increased PaO<sub>2</sub>
  - b. increased PaCO<sub>2</sub>
  - c. increased pH
  - d. none of the above
26. Patients with hypoxic drive are stimulated to breathe by
- a. increases in PaO<sub>2</sub>
  - b. decreases in PaCO<sub>2</sub>
  - c. increasing pH
  - d. none of the above

Match the following modified forms of respiration with their descriptions:

27. coughing                      a. prolonged exhalation  
sneezing                        b. respiratory distress sign in infants  
hiccupping                      c. protective airway function  
sighing                         d. caused by nasal irritation  
grunting                        e. diaphragmatic spasm
28. The average volume of gas inhaled in one respiratory cycle is known as
- a. minute volume  
b. tidal volume  
c. alveolar volume  
d. none of the above
29. Maximum lung capacity in the average adult male is approximately
- a. 4500 ml  
b. 350 ml  
c. 6000 ml  
d. 500 ml
30. The average tidal volume in the healthy adult male is approximately
- a. 150 ml  
b. 500 ml  
c. 350 ml  
d. 6000 ml
31. Minute volume is calculated as
- a. respiratory rate x dead air space  
b. tidal volume - dead air space  
c. alveolar volume/dead air space  
d. tidal volume x respiratory rate
32. The stiffness or flexibility of the lungs is known as
- a. capnography  
b. compliance  
c. saturation  
d. atelectasis
33. Upper airway obstruction can be caused by

- a. anaphylaxis
  - b. epiglottitis
  - c. respiratory burns
  - d. all of the above
34. Sellick's maneuver is used to
- a. prevent regurgitation
  - b. aid in EOA insertion
  - c. open the airway in trauma
  - d. all of the above
35. Your patient is semi-conscious with a gag reflex. Which of the following airway adjuncts is indicated?
- a. OPA
  - b. NPA
  - c. endotracheal tube
  - d. EOA
36. The major advantage of using a NPA is that
- a. it isolates the trachea
  - b. it is easy to suction through
  - c. it can be used in the presence of a gag reflex
  - d. none of the above
37. The distal cuff on an endotracheal tube should be filled with \_\_\_\_ ml of air.
- a. 5-10
  - b. 10-20
  - c. 20-30
  - d. 30-35
38. Noncuffed endotracheal tubes are recommended for children under the age of \_\_\_\_ years.
- a. 5
  - b. 8
  - c. 10
  - d. 12
39. Endotracheal intubation may be attempted in all of the following situations except
- a. patients without a gag reflex
  - b. anaphylaxis

- c. respiratory burns
  - d. epiglottitis
40. Which of the following drugs may not be administered down the endotracheal tube?
- a. epinephrine
  - b. atropine
  - c. lidocaine
  - d. sodium bicarbonate
41. Each endotracheal intubation attempt should be limited to \_\_\_\_\_ seconds.
- a. 10
  - b. 15
  - c. 30
  - d. 60
42. The endotracheal tube may be misplaced into which of the following structures?
- a. esophagus
  - b. pyriform sinus
  - c. vallecula
  - d. all of the above
43. Which of the following indicates an esophageal intubation?
- a. phonation
  - b. absence of breath sounds
  - c. gurgling sounds heard over the epigastrium
  - d. all of the above
44. The proper position of the head and neck for endotracheal intubation in the non-trauma patient is the \_\_\_\_ position.
- a. neutral
  - b. hyperextended
  - c. sniffing
  - d. flexed
45. The curved, or Macintosh, blade is designed to
- a. lift the epiglottis
  - b. spread the vocal cords
  - c. fit into the vallecula

- d. none of the above
46. If your intubated patient has breath sounds only over the right chest, you should
- a. remove the tube immediately
  - b. secure the tube in place
  - c. bring the tube back a few centimeters and recheck
  - d. push the tube in a few centimeters and recheck
47. Which of the following is true regarding suctioning?
- a. it should be limited to 30 seconds
  - b. apply suction during removal
  - c. hyperventilate the patient before and after suctioning
  - d. all of the above
48. The nasal cannula delivers oxygen concentrations in the range of \_\_\_\_ percent.
- a. 10-50
  - b. 50-100
  - c. 24-44
  - d. 40-60
49. Nasal cannula flow rates should not exceed \_\_\_\_ lpm.
- a. 3
  - b. 6
  - c. 8
  - d. 10
50. The simple face mask delivers oxygen concentrations in the range of \_\_\_\_\_ percent.
- a. 20-40
  - b. 40-60
  - c. 60-80
  - d. 80-100
51. Simple face mask flow rates should never fall below \_\_\_\_ lpm.
- a. 3
  - b. 6
  - c. 8
  - d. 10
52. The nonrebreather mask delivers oxygen concentrations in the range of \_\_\_\_ percent.

- a. 20-40
  - b. 40-60
  - c. 60-80
  - d. 80-100
53. Nonrebreather mask flow rates should never fall below \_\_\_ lpm.
- a. 3
  - b. 6
  - c. 8
  - d. 10
54. The venturi system delivers oxygen concentrations in the range of \_\_\_\_\_ percent.
- a. 24-40
  - b. 40-60
  - c. 60-80
  - d. 80-100
55. To achieve effective ventilatory support you must deliver at least \_\_\_ ml of oxygen at a rate of \_\_\_ breaths per minute.
- a. 300, 16-20
  - b. 500, 12-22
  - c. 800, 12-20
  - d. 1000, 16-24
56. Using a pocket mask without supplemental oxygen delivers oxygen in the range of \_\_\_\_\_ percent.
- a. 16-17
  - b. 21-22
  - c. 20-50
  - d. 90-100
57. A bag-valve-mask device with an oxygen reservoir can deliver up to \_\_\_\_\_ percent of oxygen with flow rates at 10-15 lpm.
- a. 50
  - b. 60
  - c. 80
  - d. 95
58. A demand valve resuscitator will deliver up to \_\_\_\_\_ percent oxygen at its highest flow

rates.

- a. 50
  - b. 60
  - c. 80
  - d. 100
59. Which of the following complications is associated with demand valve use?
- a. pneumothorax
  - b. subcutaneous emphysema
  - c. gastric distention
  - d. all of the above
60. Which of the following is true regarding the use of an automatic ventilator?
- a. they deliver higher minute volumes than the bag-valve-mask
  - b. most units deliver controlled ventilation only
  - c. they can be used safely in all age groups
  - d. the pop-off valves should be disengaged
61. In which of the following cases might higher airway pressures be necessary to ventilate the lungs?
- a. cardiogenic pulmonary edema
  - b. ARDS
  - c. bronchospasm
  - d. all of the above
62. Another name for the hypopharynx is the
- a. nasopharynx
  - b. oropharynx
  - c. laryngopharynx
  - d. all of the above
  - e. none of the above
63. The portion of the pharynx extending from the posterior soft palate to the upper end of the esophagus is called the
- a. nasopharynx
  - b. oropharynx
  - c. laryngopharynx
  - d. all of the above
  - e. none of the above
64. The portion of the pharynx extending from the hyoid bone at the base of the tongue to the trachea (anteriorly) and the esophagus (posteriorly) is called the

- a. nasopharynx
  - b. oropharynx
  - c. laryngopharynx
  - d. all of the above
  - e. none of the above
65. Hairlike fibers projecting from epithelial cells, which propel mucus, pus, and dust particles are called
- a. nares
  - b. selea
  - c. separation
  - d. cilia
  - e. septum
66. The tongue is attached to the
- a. mandible
  - b. hyoid bone
  - c. posterior oropharynx
  - d. A and B
  - e. B and C
67. Because of the amount of vagal innervation, stimulation of the larynx by a laryngoscope or endotracheal tube may cause
- a. tachycardia and increased respiratory rate
  - b. tachycardia and hypotension
  - c. bradycardia and hypertension
  - d. bradycardia and decreased respiratory rate
  - e. any of the above combinations
68. The mainstream bronchi divide into the \_\_\_\_\_, which ultimately divide into the \_\_\_\_\_ (the small airways).
- a. bronchioles/alveoli
  - b. bronchioles/lung parenchyma
  - c. secondary bronchi/bronchioles
  - d. secondary bronchi/alveolar ducts
  - e. alveolar ducts/alveoli
69. Oxygen and carbon dioxide exchange primarily occurs in the
- a. alveoli
  - b. epiglottis

- c. pulmonary arteries
  - d. trachea
  - e. bronchi
70. The volume of dead space air is approximately \_\_\_\_ ml in the adult.
- a. 150
  - b. 250
  - c. 350
  - d. 500
  - e. 600
71. The pleural layer that lines the exterior of the lungs is called the
- a. partial pleura
  - b. visceral pleura
  - c. parietal pleura
  - d. thoracic pleura
72. The main respiratory center lies in the medulla, which is located in the
- a. mediastinum
  - b. diaphragm
  - c. brain stem
  - d. medullary cavity
73. Which of the following statements regarding the act of respiration is true?
- a. breathing occurs as a result of pressure changes in the lungs
  - b. inspiration begins by contraction of the diaphragm and the intercostal muscles
  - c. expiration occurs when the inspiratory muscles relax.
  - d. all of the above are true
  - e. none of the above is false
74. The normal resting respiratory rate for a child is
- a. 5-12
  - b. 12
  - c. 12-20
  - d. 18-24
  - e. 40-60
75. The normal resting respiratory rate for an infant is
- a. 5-12
  - b. 12
  - c. 12-20
  - d. 18-24
  - e. 40-60

76. The approximate percentage of oxygen found in room air is \_\_\_\_ percent
- 11
  - 50
  - 21
  - 30
  - 31
77. Which of the following statements regarding the exchange of oxygen and carbon dioxide is true?
- gas diffuses from areas of higher partial pressure to areas of lower partial pressure
  - oxygen will diffuse from the pulmonary capillaries into the alveolar spaces
  - carbon dioxide will diffuse from the alveolar air into the pulmonary circulation
  - all of the above are true
  - none of the above are true
78. The most common cause of upper airway obstruction is
- aspiration of unchewed food
  - occlusion of the posterior pharynx by the tongue
  - consumption of alcohol during meals
  - food consumption while engaged in physical activity
79. Aspiration of vomitus may cause
- increased interstitial fluid and pulmonary edema
  - alveoli damage
  - bronchial obstruction
  - all of the above
  - none of the above
80. Laryngeal spasms may occur secondary to
- edema of the glottis
  - bronchospasm
  - spinal trauma
  - all of the above
  - none of the above
81. Respiratory difficulty may be noted by observation of the patient's use of accessory muscles accompanied by retractions of
- intracostal and subcostal spaces
  - suprasternal notch and supraclavicular fossa
  - submandibular and submucosal fossa
  - A and B
  - A, B, and C

82. While ventilating an intubated patient with the bag-valve-mask you notice that it becomes more and more difficult to compress the bag. This may indicate
- decreasing lung compliance
  - occlusion of the endotracheal tube
  - endobronchial intubation
  - all of the above
83. Which of the following manual airway maneuvers is the preferred method for all but spine-injured patients?
- head-tilt with chin-lift
  - chin lift
  - head-tilt jaw thrust
  - jaw-thrust
  - head-tilt with jaw thrust
84. Which of the following statements regarding an oropharyngeal airway is false?
- the OPA will keep the base of the tongue from occluding the posterior pharynx
  - when intubated, the OPA will serve as a bite block to prevent occlusion of the ET tube
  - the OPA will isolate the trachea
  - the OPA may obstruct the airway
  - patients with a gag reflex will not tolerate the OPA
85. Which of the following statements regarding the NPA is false?
- the NPA can be used in the presence of oral cavity trauma
  - the NPA may cause epistaxis
  - the NPA may be used when the patient's teeth are clenched
  - the NPA will bypass the tongue
  - patients with a gag reflex will not tolerate placement of an NPA
86. Which of the following statements regarding the EOA is false?
- the EOA delivers oxygen at the level of the laryngopharynx
  - the EOA is inserted with the patient's head/neck in a neutral or flexed position
  - the EOA may cause obstruction of the trachea
  - the EOA may be used in persons of all ages and sizes
  - the EOA is contraindicated in patients who have ingested caustic poisons
87. The inflatable cuff at the distal end of the EOA holds approximately \_\_\_\_ ml of air.

- a. 0-5
  - b. 5-10
  - c. 20-25
  - d. 25-30
  - e. 30-35
88. The inflatable cuff at the distal end of the EGTA holds approximately \_\_\_\_ ml of air.
- a. 0-5
  - b. 5-10
  - c. 20-25
  - d. 25-30
  - e. 30-35
89. Which of the following statements regarding the EGTA is true?
- a. the EGTA increases the opportunity for regurgitation
  - b. the EGTA permits the passage of an NG tube for decompression of the stomach
  - c. unlike the EOA, the EGTA has no contraindications
  - d. all of the above are true
  - e. none of the above are true
90. The preferred method of airway management of an unconscious patient who does not have a gag reflex is
- a. NPA and BVM
  - b. OPA and BVM
  - c. EOA and BVM
  - d. nasotracheal intubation and BVM
  - e. endotracheal intubation and BVM
91. When a flexible stylet is used to curve the endotracheal tube, the stylet tip must be recessed at least \_\_\_\_ from the distal end of the tube.
- a. 2 1/4 inches
  - b. 2 inches
  - c. 1 1/2 inches
  - d. 1/2 - 3/4 inches
  - e. 1/3 inches
92. Which of the following statement regarding nasotracheal intubation is false?
- a. spinal injury is not a contraindication

- b. may be performed on an apneic patient
  - c. does not require a laryngoscope
  - d. presents a greater risk of infection
  - e. may cause additional trauma
93. During blind nasotracheal intubation, advancement of the ET tube into the glottic opening is accomplished
- a. between the patient's respiratory efforts
  - b. during the patient's expirations
  - c. during the patient's inspirations
  - d. as the patient swallows
94. When the anterior neck is palpated from the top, downwards, the cricoid cartilage is
- a. the first prominent structure
  - b. the second prominent structure
  - c. the third prominent structure
  - d. between the first and second prominent structure
95. Which of the following statements regarding transtracheal jet insufflation is false?
- a. placement of a second large-bore catheter next to the first one may be required in cases of total upper airway obstruction to promote more effective expiration
  - b. Transtracheal jet insufflation provides oxygenation and ventilation comparable to endotracheal intubation
  - c. high pressure ventilation and air entrapment during transtracheal jet insufflation may cause a pneumothorax
  - d. the ventilation/exhalation ratio is 1:4
  - e. none of the above is false
96. Which of the following statements regarding cricothyrotomy is false?
- a. an incision is made in the cricoid membrane
  - b. attaching the inserted tracheostomy tube to a 15 mm adapter allows for BVM ventilation
  - c. cricothyrotomy is preferred over transtracheal jet insufflation
  - d. complications include hemorrhage or subcutaneous emphysema
  - e. none of the above is false