1. Your patient has severe pneumonia and the blood gas measurements reveal a $PaCO_2$ of 51 mmHg and a PaO_2 of 55 mmHg. The patient is breathing with an air entrainment mask at an FIO_2 of 0.60. What conclusion(s) can you reach?
   A) The patient has ventilatory failure
   B) The patient has oxygenation failure
   C) The patient has respiratory failure
   D) All the above

2. Which of the following is most likely to precipitate respiratory failure in a patient with borderline pulmonary function?
   A) Hypertension
   B) Severe fever
   C) Hypothermia
   D) Tachycardia

3. Your patient has a PaO_2 of 39 mmHg. How would you classify this level of oxygenation?
   A) Mild hypoxemia
   B) Moderate hypoxemia
   C) Severe hypoxemia
   D) Depends on the FIO_2

4. What would be the proper classification for a 70-year-old male with a PaO_2 of 55 mmHg?
   A) Mild hypoxemia
   B) Moderate hypoxemia
   C) Severe hypoxemia
   D) Depends on the FIO_2

5. What causes hypoxemia that typically does not respond well to oxygen therapy?
   A) Shunt
   B) $\dot{V}/\dot{Q}$ mismatching
   C) Hypoventilation
   D) None of the above

6. Which of the following is <u>least</u> likely to be associated with ventilatory failure?
   A) Neuromuscular disease
   B) Cervical spinal cord injury
   C) Drug overdose
   D) Pneumonia

7. Which of the following can contribute to diaphragm dysfunction and lead to ventilatory failure?
   A) Emphysema
   B) Malnutrition
   C) Electrolyte abnormalities
   D) All the above

8. What term is used to describe the condition of right heart failure due to chronic pulmonary hypertension?
   A) Congestive heart failure
   B) Cor pulmonale
   C) Cardiac tamponade
   D) ARDS

9. The patient with inadequate oxygenation of the brain will usually display what symptom(s)?
   A) Confusion
   B) Excitement
   C) Diminished cognitive function
   D) A and C only

10. What is the primary response of the brain to severe ventilatory failure with respiratory acidosis?
   A) Somnolence and potentially coma
   B) Excitement
   C) Depends on the PaO_2
   D) Depends on the blood pressure

11. Your patient has severe hypoxemia according to the blood gas analysis, but cyanosis is not seen. What may explain this?
   A) Hypotension
   B) Anemia
   C) Leukocytosis
   D) Fever

12. Your patient has COPD and has been told he has cor pulmonale. Which of the following findings is NOT consistent with this patient?
   A) JVD
   B) Hepatomegaly
   C) Bradycardia
   D) Pedal edema

13. Which of the following findings represents the body's compensatory mechanism for chronic hypoxemia?
    A) Leukocytosis
    B) Hypokalemia
    C) Polycythemia
    D) Hypernatremia

14. What clinical finding(s) is (are) consistent with diaphragm fatigue?
    A) Tachypnea
    B) Respiratory alterans
    C) Abdominal paradox
    D) All the above

15. Which of the following modes of therapy is most likely to be effective when the patient has hypoxemia due to physiologic shunting?
    A) Simple oxygen mask
    B) Nasal cannula
    C) Air entrainment mask
    D) Positive pressure ventilation

16. Your patient has severe hypoxemia due to postoperative atelectasis. What treatment should be applied initially?
    A) Oxygen by nasal cannuala
    B) Oxygen with CPAP
    C) Intubation and mechanical ventilation
    D) Hyperbaric oxygen therapy

17. What mode of mechanical ventilation allows the patient to breathe spontaneous breaths between each mechanical breath?
    A) Assist control mode
    B) IMV mode
    C) Control mode
    D) CPAP mode

18. Inverse ratio ventilation (IRV) would be most useful for patients with which of the following illnesses?
    A) Drug overdose
    B) Lobar pneumonia
    C) ARDS
    D) Polio

19. What range is normally used for determining the appropriate tidal volume during initial mechanical ventilation?
    A) 4–8 mL/kg of ideal body weight
    B) 5–10 mL/kg of ideal body weight
    C) 10–15 mL/lb of ideal body weight
    D) 10–15 mL/kg of actual body weight

20. You are monitoring a patient during mechanical ventilation and the peak pressure is reaching 55 cm H_20. What problem does this potentially cause?
    A) Barotrauma
    B) Renal failure
    C) Hypertension
    D) Auto-PEEP

21. Your patient has a long history of COPD with CO_2 retention. He now is admitted for acute respiratory failure due to a lung infection. His $PaCO_2$ has acutely elevated to over 70 mmHg. The physician decides to intubate and use mechanical ventilation. What should be your goal with the mechanical ventilation?
    A) Return the $PaCO_2$ to about 40 mmHg
    B) Return the $PaCO_2$ to about 50 mmHg
    C) Lower the $PaCO_2$ enough to return the pH to 7.35
    D) Lower the $PaCO_2$ enough to return the pH to 7.50

22. What weaning parameter may be most useful because it evaluates the patient's breathing endurance as well as current pulmonary status?
    A) Peak inspiratory pressure
    B) Vital capacity
    C) Rapid shallow breathing index
    D) Spontaneous respiratory rate

23. What is the primary problem with using IMV for weaning?
    A) The work of breathing through the circuit
    B) Difficult to monitor lung function
    C) Time consuming
    D) Poor patient tolerance

24. Your patient is being weaned using IMV. He appears to be tolerating the wean, but labors during the spontaneous breaths because the endotracheal tube is probably too small. What could be done to overcome this problem?
    A) Increase the tidal volume during IMV breaths
    B) Add pressure support
    C) Increase the flow rate during the IMV breaths
    D) Give the patient a mild sedative

Answer Key

1. D
2. B
3. C
4. A
5. A
6. D
7. D
8. B
9. D
10. A
11. B
12. C
13. C
14. D
15. D
16. B
17. B
18. C
19. B
20. A
21. C
22. C
23. A
24. B