1. In the clinical setting it is most useful to measure:
   a. dynamic compliance
   b. static compliance

2. Flow-volume loops can be used to measure flow restrictions caused by:
   a. bronchospasms   c. surfactant deficiency
   b. pneumothorax

3. Transpulmonary pressure refers to pressure from the airway opening to the:
   a. alveoli   c. terminal bronchiole
   b. pleural space

4. The unit change in volume per unit change in pressure is known as pulmonary:
   a. compliance   c. resistance
   b. elastance

5. The slope of a line between any two points on a pressure-volume curve represents:
   a. compliance       c. volume
   b. resistance

6. The product of compliance and resistance is known as the:
   a. flow rate       c. time constant
   b. inspiratory capacity

7. The effort required to overcome the elastic and resistive forces of the lung is termed:
   a. compliance   c. work of breathing
   b. dynamic flow

8. The normal phase angle between the rib cage and abdomen is:
   a. 0       c. +4
   b. +2
9. When lung inflation exceeds the upper inflection point of the pressure-volume relationship:
   a. compliance is decreased  
   b. compliance is increased

10. Flow that drops off abruptly during expiration is a sign of:
   a. airway collapse  
   b. high opening pressure

11. Which of the following measurements is altered when the face mask fits too tightly?
   a. airway resistance  
   b. lung compliance

12. Which of the following factors does not directly affect oxygen transport?
   a. alveolar shunting  
   b. body temperature

13. \( \text{PaO}_2 \) measures the amount of oxygen:
   a. bound to carriers in the blood  
   b. crossing the alveolar-capillary membrane  
   c. dissolved in plasma

14. Compared to oxygen saturation levels, \( \text{PaO}_2 \) is a more accurate measure of oxygen level when the \( \text{PaO}_2 \) is:
   a. between 60 and 90 mmHg  
   b. \(<60 \text{ mmHg} \)  
   c. \( >90 \text{ mmHg} \)

15. The majority of carbon dioxide in the blood travels:
   a. bound to proteins  
   b. dissolved in plasma

16. Buffer systems consist of a combination of:
   a. strong acid and weak base  
   b. weak acid and strong base  
   c. weak acid and weak base

17. The normal range for base excess/base deficit is:
   a. \(-2 \text{ to } +2 \)  
   b. \(-3 \text{ to } +3 \)

18. Which of the following pH values would be found in a compensated blood gas?
   a. 7.32  
   b. 7.36

19. Fetal acidosis is indicated by a pH of \(< \text{_____.} \)
   a. 7.20  
   b. 7.25

20. Which \( \text{PaO}_2 \) values (in mmHg) best represents a normal range for a term infant?
   a. 40–60  
   b. 50–70

21. When used, the dose of sodium bicarbonate is _____ mEq/kg.
   a. 1  
   b. 2  
   c. 3

22. Indications for intubation and mechanical ventilation include a:
   a. base excess of more than \(-4 \)  
   b. \( \text{PCO}_2 \) of more than 50  
   c. \( \text{pH} \) of less than 7.25

23. During pressure-cycled ventilation the presence of a mucous plug may result in:
   a. delivery of excessive volume  
   b. loss of positive and expiratory pressure  
   c. shortening of the inspiratory time

24. With the use of a time-cycled, pressure-limited ventilator, gas flow is terminated when a preset _____ is reached.
   a. pressure  
   b. time

25. For time-cycled ventilation a normal inspiratory time \( (T_I) \) is _____ second.
   a. 0.3–0.5  
   b. 0.5–0.7  
   c. 0.7–0.9

26. In mechanical ventilation the major determinant of oxygenation is:
   a. mean airway pressure  
   b. peak inspiratory pressure (PIP)  
   c. positive end expiratory pressure (PEEP)

27. During conventional mechanical ventilation the primary variables controlling \( \text{PaCO}_2 \) levels are rate and:
   a. flow  
   b. \( T_1 \)

28. Hypocapnia increases an infant’s risk of developing:
   a. cerebral palsy  
   b. patent ductus arteriosus  
   c. retinopathy of prematurity

29. In an infant receiving mechanical ventilation, increasing the PEEP is unlikely to improve oxygenation once the PEEP exceeds _____ cmH\(_2\)O.
   a. 4–5  
   b. 5–6  
   c. 6–7

30. When compliance is high, the slope of the compliance curve is:
   a. depressed  
   b. flat  
   c. steep

31. In the lungs, viscous resistance is generated by:
   a. air movement  
   b. gas flow  
   c. tissue friction
32. During spontaneous breathing, airway resistance is greater on:
   a. inspiration
   b. expiration

33. When compliance decreases (as in respiratory distress syndrome [RDS]), time constants are:
   a. longer  
   c. the same
   b. shorter

34. The most common, purely obstructive newborn lung condition is:
   a. meconium aspiration syndrome
   b. congenital diaphragmatic hernia
   c. respiratory distress syndrome

35. Factors affecting the amount of pressure delivered to the infant with a high-flow nasal cannula include:
   a. amount of humidity  
   c. type of lung disease
   b. infant's weight

36. Which of the following is a side effect of high levels of continuous positive airway pressure (CPAP)?
   a. decreased venous return
   b. chest wall distortion
   c. fall in minute ventilation

37. The mechanism by which CPAP is thought to improve respiratory drive is through stimulation of:
   a. central chemoreceptors  
   c. vagal nerve fibers
   b. stretch receptors

38. There is no benefit from CPAP levels <____ cmH2O.
   a. 5
   c. 7
   b. 6

39. Compared to nasal prongs, CPAP given via an endotracheal (ET) tube results in:
   a. higher airway resistance
   b. lower airway resistance
   c. similar airway resistance

40. According to De Paoli and colleagues, the most effective delivery device for noninvasive ventilation (NIV) is:
   a. ET tube
   c. short binastral prongs
   b. nasopharyngeal tube

41. Which of the following is a contraindication to the use of NIV?
   a. obstructive apnea
   c. RDS
   b. omphalocele

42. Which of the following is not a characteristic of benign CPAP belly?
   a. presence of loops
   b. skin discoloration
   c. upward pressure on the diaphragm

43. For stable infants on NIV, the recommended interval for respiratory assessments is every ____ hours.
   a. 1–2
   c. 5–6
   b. 3–4

44. Stockinette caps used to hold NIV tubing should be replaced every ____ hours.
   a. 12–24
   c. 36–48
   b. 24–36

45. A ventilator trigger device that is too sensitive can result in:
   a. auto triggering of breaths
   b. loss of PEEP
   c. prolonged breath

46. In an infant with a spontaneous respiration rate of 50 on assist/control ventilation with a rate of 30, how many breaths per minute are supported?
   a. 30
   b. 50

47. In volume guarantee ventilation, the amount of pressure delivered is determined by:
   a. average pressure of the previous four breaths
   b. exhaled tidal volume (VT) of the previous breath
   c. operator

48. With synchronized ventilation, the PIP required for adequate VT is determined by the infant's:
   a. gestational age
   c. size
   b. lung condition

49. The recommended PEEP for infants requiring an FiO2 of 0.4 is ____ cmH2O.
   a. 5
   c. 7
   b. 6

50. To avoid air trapping in larger infants it is recommended that ventilator rates be maintained below ____/minute.
   a. 60
   c. 80
   b. 70

51. In small infants, the use of ventilator rates of <10 breaths per minute results in:
   a. inadvertent PEEP
   b. increased dead space
   c. increased work of breathing
ANSWER FORM: Acute Respiratory Care of the Neonate, 3rd Edition—Course 3

Please completely fill in the circle of the one best answer using a dark pen.

Questions are numbered vertically.

1. a. 7. a.  13. a.  19. a.  25. a.  31. a.  37. a.  43. a.  49. a.
   b. c.  b. c.  b. c.  b. c.  b. c.  b. c.  b. c.

2. a.  8. a.  14. a.  20. a.  26. a.  32. a.  38. a.  44. a.  50. a.
   b. c.  b. c.  b. c.  b. c.  b. c.  b. c.  b. c.

3. a.  9. a.  15. a.  21. a.  27. a.  33. a.  39. a.  45. a.  51. a.
   b. c.  b. c.  b. c.  b. c.  b. c.  b. c.  b. c.

4. a.  10. a.  16. a.  22. a.  28. a.  34. a.  40. a.  46. a.
   b. c.  b. c.  b. c.  b. c.  b. c.  b. c.  b. c.

5. a.  11. a.  17. a.  23. a.  29. a.  35. a.  41. a.  47. a.
   b. c.  b. c.  b. c.  b. c.  b. c.  b. c.  b. c.

   b. c.  b. c.  b. c.  b. c.  b. c.  b. c.  b. c.

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<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
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Objectives:
I am able to:

1. Interpret pulmonary function data.  
   1 2 3 4 5
2. Correctly analyze neonatal blood gases.  
   1 2 3 4 5
3. Explain the principles of mechanical ventilation.  
   1 2 3 4 5
4. Discuss the special aspects of the nursing care of neonates on various types of noninvasive ventilation.  
   1 2 3 4 5
5. Compare two types of mechanical ventilation as to which infants respond best to which therapy.  
   1 2 3 4 5

Presentation

1. The material presented is relevant to my practice.  
   1 2 3 4 5
2. The content of this activity is likely to engender a change in my clinical practice.  
   1 2 3 4 5
3. The questions on the test reflected the content of the book.  
   1 2 3 4 5
4. The book content was comprehensive.  
   1 2 3 4 5
5. The test directions were clear.  
   1 2 3 4 5
6. The CNE activity was free of commercial bias.  
   1 2 3 4 5
7. I would recommend this CNE activity to colleagues.  
   1 2 3 4 5
8. I perceive the education level of this course to be:
   1 = Basic; 2 = Intermediate; 3 = Advanced
   1 2 3
9. How long did it take you to complete the course?  
   _____ hours  _____ minutes
10. In what level unit do you practice?  
    I___ II___ III___
    I am a  □ staff nurse  □ NNP  □ nurse manager  _________________ other (please state)
What subjects would you like to see offered for CE courses?  
__________________________________________________________________________
__________________________________________________________________________

Additional comments:  
__________________________________________________________________________
__________________________________________________________________________