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# *Chapter 1*

## **Respiratory Anatomy and Physiology**

1. Describe the difference between anatomy and physiology in the space below:

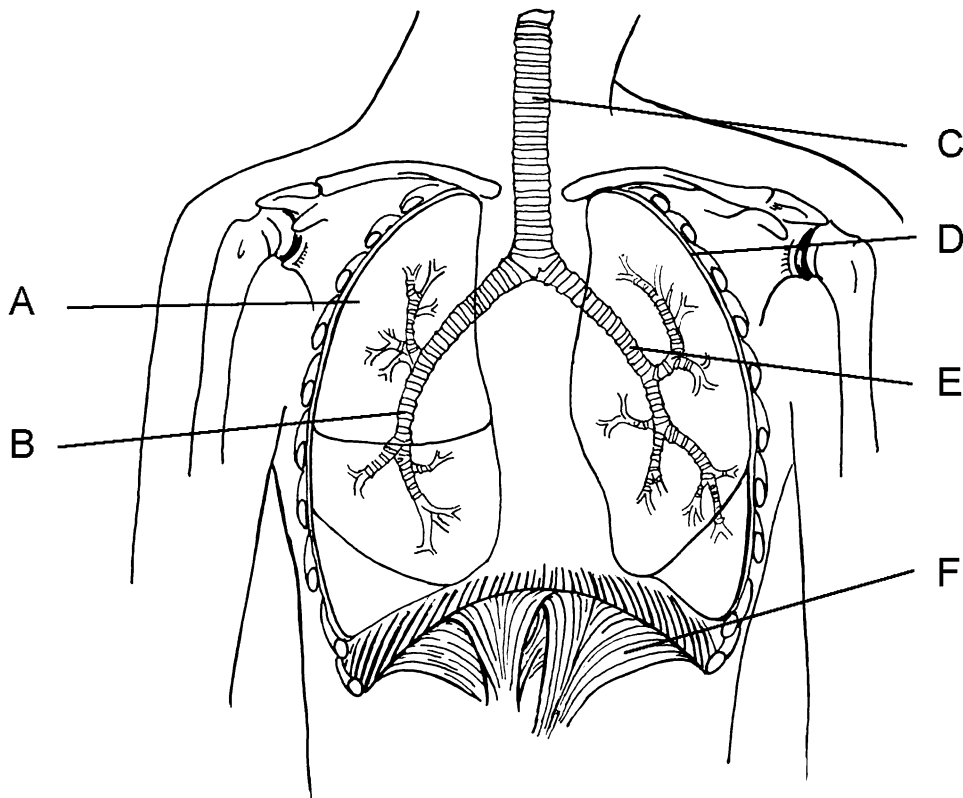
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2. At rest the diaphragm sits in a/an \_\_\_\_\_ position.
3. The diaphragm \_\_\_\_\_ during inspiration and moves downward and flattens, enlarging the chest cavity.

4. Identify the following structures of the lower airway and right and left lungs:



- Left Bronchus
- Right Upper Lobe of Lungs
- Pleura
- Right Bronchus
- Diaphragm
- Trachea

A. \_\_\_\_\_

B. \_\_\_\_\_

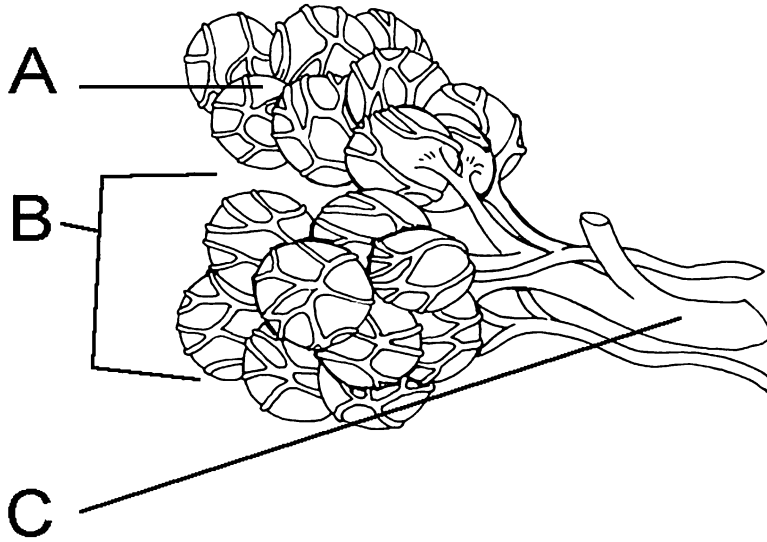
C. \_\_\_\_\_

D. \_\_\_\_\_

E. \_\_\_\_\_

F. \_\_\_\_\_

5. Identify the structures in the final branches of the respiratory tree where primary gas exchange occurs:

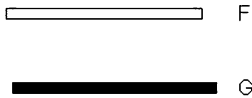
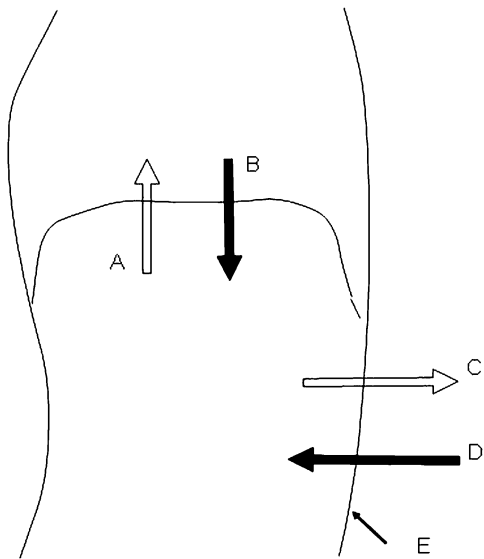


- Bronchiole
- Capillary
- Alveoli

A. \_\_\_\_\_  
B. \_\_\_\_\_  
C. \_\_\_\_\_

6. The smallest branches stemming from the secondary bronchi are called \_\_\_\_\_.

7. Label the direction the thoracic cavity moves with inspiration and expiration



■ Inspiration  
 ■ Expiration

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_

What muscle group is arrow E pointing to?

E. \_\_\_\_\_

Label whether the arrows are **passive movement** or **active contraction**:

F. \_\_\_\_\_

G. \_\_\_\_\_

8. Alveolar pressure is changed by two forces. Name and give an example of each type of force.

a. \_\_\_\_\_

b. \_\_\_\_\_

9. Define Functional Residual Capacity of FRC:

\_\_\_\_\_

\_\_\_\_\_

10. Complete the following:

a. The membrane that lines the lung is called the \_\_\_\_\_.

b. The membrane that lines the thorax is called the \_\_\_\_\_.

c. The act of inspiration is \_\_\_\_\_ active. (*sometimes, always, or never*)

# Chapter 4

## Evaluation

1. Name three changes in voice that may accompany a voice disorder.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

2. Describe what the International Classification of Functioning, Disability, and Health (ICF) is, and why it was established:

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3. List the 5 Ds of **diagnosis**:

a. D \_\_\_\_\_

\_\_\_\_\_

b. D \_\_\_\_\_

\_\_\_\_\_

c. D \_\_\_\_\_

\_\_\_\_\_

d. D \_\_\_\_\_  
\_\_\_\_\_

e. D \_\_\_\_\_  
\_\_\_\_\_

4. Give the definition of a **voice disorder** according to Ma et al. (2007).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. What does a **laryngologist** specialize in?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Give 3 examples of professionals who would be on a **voice care team**:

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

7. Describe the importance of collecting a clinical case history:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. Provide 5 examples of important items gathered during the data collection phase of the evaluation:

- a. \_\_\_\_\_  
\_\_\_\_\_
- b. \_\_\_\_\_  
\_\_\_\_\_
- c. \_\_\_\_\_  
\_\_\_\_\_
- d. \_\_\_\_\_  
\_\_\_\_\_
- e. \_\_\_\_\_  
\_\_\_\_\_

9. Define **stridor**:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. What is the purpose of an **oral peripheral examination with a voice assessment**?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

11. What should the clinician pay *specific* attention to during an oral peripheral exam?

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12. What distinguishes an **oral peripheral examination** from a **cranial nerve examination**?

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13. Fill in the chart below:

	<b>Cranial Nerve</b>	<b>Major Function</b>
VII	Facial	
VIII	Vestibulocochlear	
IX	Glossopharyngeal	
X	Vagus	
XII	Hypoglossal	

14. One tool for examining laryngeal function via the oral cavity is:

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15. What is the **benefit** of using the transnasal laryngoscopic procedure?

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16. What **joint statement** was developed by the American Academy of Otolaryngology Voice and Swallow committee and the Special Interest Division on Voice and Voice Disorders of the American Speech-Language and Hearing Association?

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17. The most important considerations in the selection of any instrument used to evaluate voice are that they meet the **criteria** of being:

- a. reliable
- b. valid
- c. both a and b
- d. none of the above

18. How does laryngovideostroboscopy differ from high-speed digital imaging?

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19. The following are parameters that are rated from a videostroboscopic examination. Briefly define each term.

Parameters	Definition
Glottal closure:	
Supraglottic activity:	
Vertical level of approximation:	
Vocal fold edge:	
Vocal fold mobility:	
Amplitude of vibration:	
Mucosal wave:	
Nonvibratory portion:	
Phase closure:	
Phase symmetry:	
Periodicity:	
Overall laryngeal function:	

20. Complete the following:

**Videokymography** can provide high-speed images of vocal fold vibration, sampling up to \_\_\_\_\_ frames per second.

21. **True/False.** The line images from videokymography are portrayed in real time and vocal fold movement can be tracked.

22. Complete the following:

**High-speed digital videoendoscopy** can occur at a rate up to \_\_\_\_\_ frames per second.

23. Two **aerodynamic parameters** used to define vocal function are:

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24. Name the device in the picture shown below.



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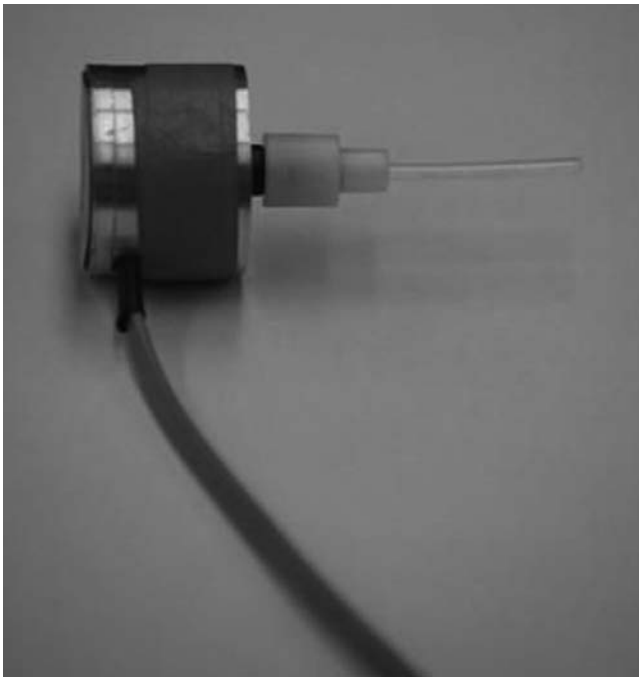
What information can this device collect?

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25. Name the device in the picture shown below.



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26. **True/False.** An average airflow signal gives significant detail about the flow modulated at the level of the glottis.

27. Define **subglottal air pressure**.

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28. Identify the units used to measure subglottal air pressure.

- a. cm H<sub>2</sub>O
- b. mL
- c. oz
- d. mm

29. Describe the measurement taken in the picture below.



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30. Clinically, what information can you obtain from the **airflow open quotient (OQ)**?

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31. What does the **maximum flow declination rate** represent?

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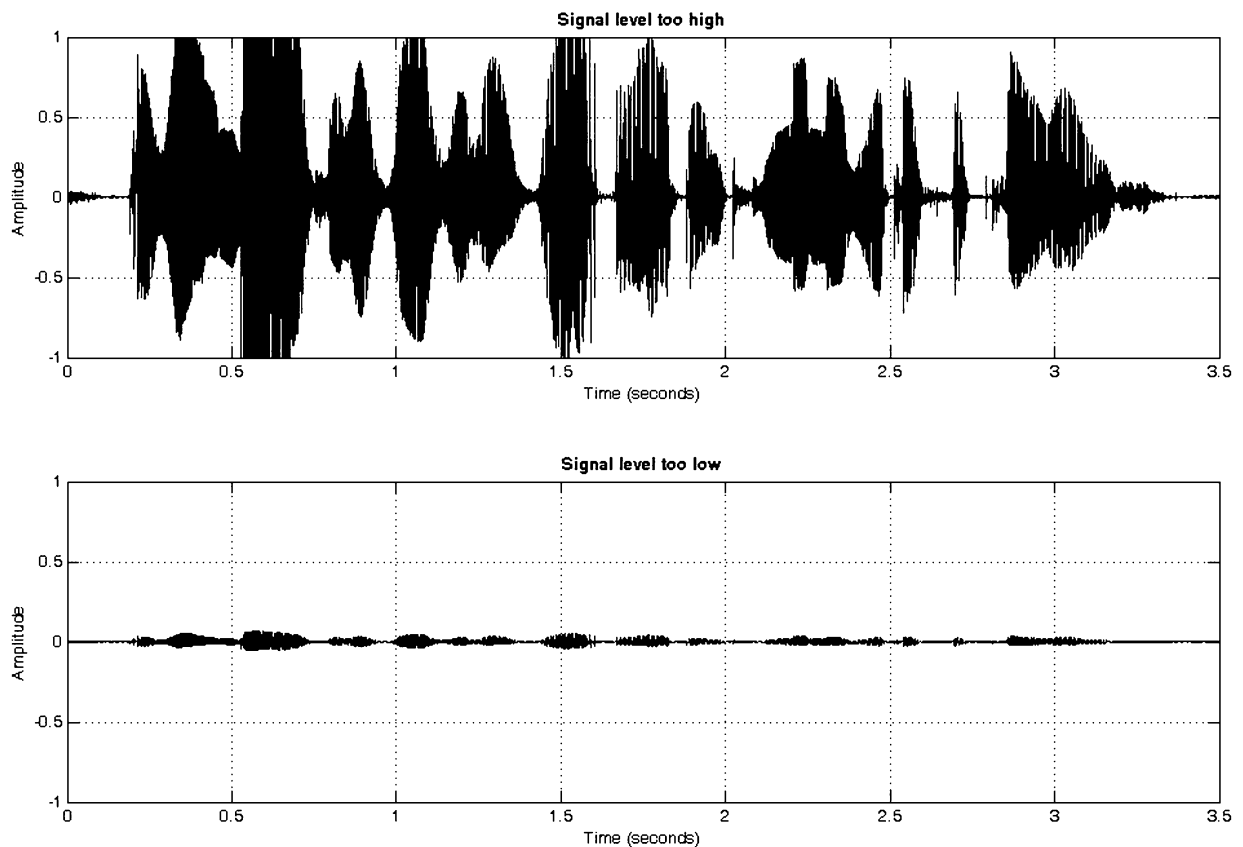
- 32. **True/False.** Peak glottal airflow relates to the maximum glottal area during vocal fold vibration.
  
- 33. **True/False.** Minimum glottal airflow relates to the amount of airflow through the glottis during the open phase of vocal fold vibration.
  
- 34. Define **sampling rate**.

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- 35. **True/False.** Peak clipping occurs when the signal intensity is so low that it cannot be correctly represented within the quantization levels available for recording.
  
- 36. Identify the two common errors in speech signal acquisition that are depicted in the figure below.



a. \_\_\_\_\_

\_\_\_\_\_

b. \_\_\_\_\_

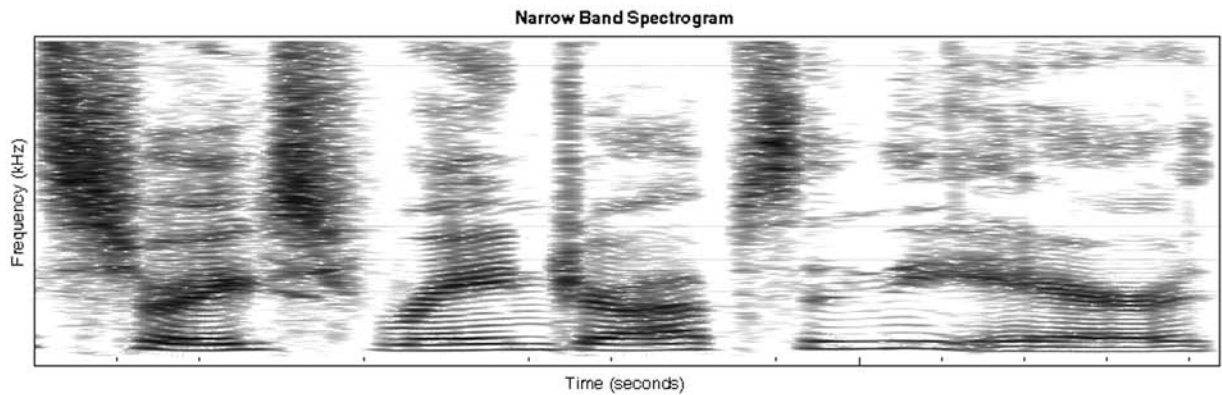
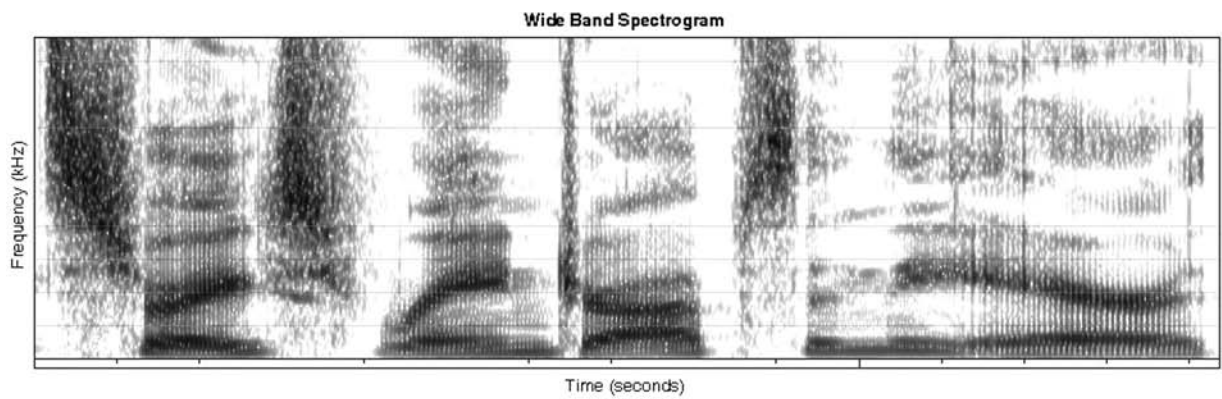
\_\_\_\_\_

37. What is a **spectrogram**?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



38. A wideband spectrogram allows:

- a. Voice quality to be determined
- b. Articulation errors to be determined
- c. Cranial nerve function to be determined

39. **True/False.** A frequency that is an integral multiple of the fundamental frequency is a harmonic.

40. Physiologically, what does the measure of fundamental frequency reflect?

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41. What does **vocal intensity** reflect and what is it related to?

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42. **True/False.** The acoustic/perceptual relationship between vocal intensity and loudness of the voice is a linear relationship.

43. Complete the following:

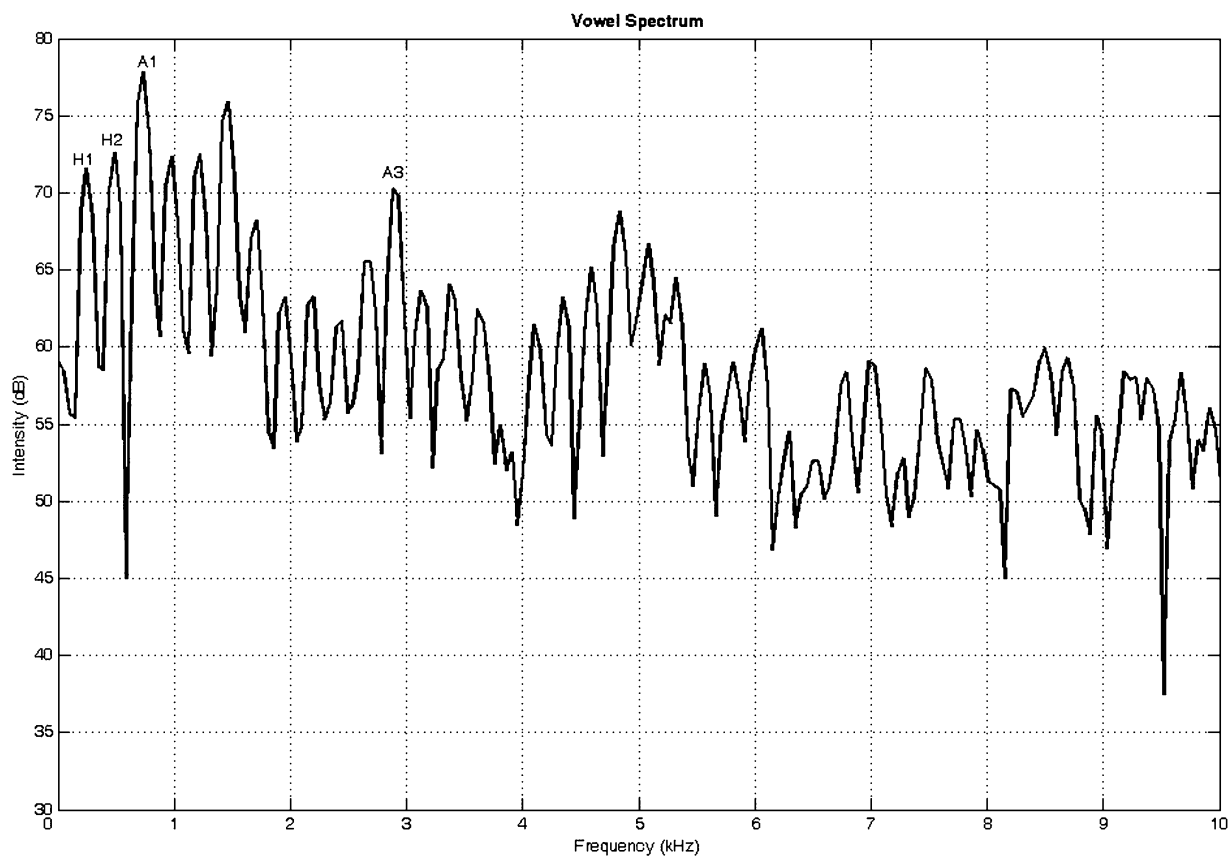
A method to gather comprehensive data about the entire range of fundamental frequencies and intensities that a patient can produce is called a \_\_\_\_\_.

44. Measures of short-term perturbation reflect the \_\_\_\_\_ variability in the speech acoustic signal.

45. Complete the following:

A \_\_\_\_\_ shows how energy is distributed across various frequencies in a signal.

46. A. Tell whether the following two figures are a short-term spectrum or a long-term average spectrum.



a. \_\_\_\_\_

# Answer Key

## Chapter 1. Respiratory Anatomy and Physiology

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1. Anatomy is the study of structures. Physiology is the study of how structures function to produce an action.
2. Dome-shaped position
3. Contracts
4. A. right upper lobe of lungs  
B. right bronchus  
C. trachea  
D. pleura  
E. left bronchus  
F. diaphragm
5. A. capillary  
B. alveoli  
C. bronchiole
6. bronchioles
7. A. expiration  
B. inspiration  
C. inspiration  
D. expiration  
E. abdominal muscles  
F. passive movement  
G. active contraction
8. a. passive force—An example is the elastic properties of the respiratory system.  
b. active force—An example is the contraction of the respiratory muscles.
9. FRC = Functional residual capacity is the rest position of the lungs at which neither the lung nor the thorax is really at a rest position.
10. A. visceral pleura  
B. parietal pleura  
C. always
11. A. scalenes  
B. pectoralis minor  
C. internal intercostals  
D. external intercostals  
E. diaphragm  
F. internal oblique  
G. manubrium  
H. pectoralis major  
I. body of sternum  
J. xiphoid process  
K. rectus abdominus  
L. external oblique  
M. transverse abdominus  
N. iliac crest