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Biology Grade 10 — Chapter 3

Respiratory System

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Independent practice MCQs from the supplied Class 10 Biology notes pack. Total: 50 questions.

A. Important / Main Topics

1. What is the process by which cells obtain energy from glucose called?

(A) Respiration
(B) Breathing
(C) Inhalation
(D) Exhalation

Correct Answer: A

Explanation: Respiration is the process by which cells obtain energy from glucose.

2. What is the movement of air into and out of the lungs called?

(A) Respiration
(B) Breathing
(C) Diffusion
(D) Osmosis

Correct Answer: B

Explanation: Breathing is the movement of air into and out of the lungs.

3. Which structure is the voice box?

(A) Pharynx
(B) Trachea
(C) Larynx
(D) Bronchus

Correct Answer: C

Explanation: The larynx is also called the voice box.

4. What is the windpipe called?

(A) Larynx
(B) Pharynx
(C) Bronchus
(D) Trachea

Correct Answer: D

Explanation: The trachea is commonly known as the windpipe.

5. Which structure prevents food from entering the trachea?

(A) Epiglottis
(B) Glottis
(C) Larynx
(D) Pharynx

Correct Answer: A

Explanation: The epiglottis is a flap of cartilage that prevents food from entering the trachea during swallowing.

6. What are the tiny air sacs in the lungs called?

(A) Bronchi
(B) Alveoli
(C) Bronchioles
(D) Capillaries

Correct Answer: B

Explanation: Alveoli are tiny air sacs in the lungs where gas exchange occurs.

7. Which gas is taken in during inspiration?

(A) Carbon dioxide
(B) Nitrogen
(C) Oxygen
(D) Water vapour

Correct Answer: C

Explanation: Oxygen is taken in during inspiration for cellular respiration.

8. Which gas is expelled during expiration?

(A) Oxygen
(B) Nitrogen
(C) Hydrogen
(D) Carbon dioxide

Correct Answer: D

Explanation: Carbon dioxide is a waste product of cellular respiration and is expelled during expiration.

9. What percentage of oxygen is present in inspired air?

(A) 21%
(B) 16%
(C) 4%
(D) 79%

Correct Answer: A

Explanation: 21% — this correctly answers the question.

10. What percentage of carbon dioxide is present in expired air?

(A) 0.04%
(B) 4%
(C) 16%
(D) 21%

Correct Answer: B

Explanation: 4% — this correctly answers the question.

11. Which muscle separates the chest from the abdomen?

(A) Intercostal muscle
(B) Cardiac muscle
(C) Diaphragm
(D) Smooth muscle

Correct Answer: C

Explanation: The diaphragm is a large muscular sheet that separates the chest from the abdomen.

12. What happens to the diaphragm during inspiration?

(A) It relaxes and moves up
(B) It remains stationary
(C) It contracts and moves up
(D) It contracts and moves down

Correct Answer: D

Explanation: It contracts and moves down — this correctly answers the question.

13. What is the inflammation of the bronchi called?

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

Correct Answer: A

Explanation: Bronchitis is the inflammation of the lining of the air passages like trachea, bronchi, and bronchioles.

14. Which disease is characterized by the breakdown of alveoli walls?

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

Correct Answer: B

Explanation: Emphysema is a respiratory disease where there is breakdown of the thin walls of alveoli.

15. Which disease is caused by bacteria Streptococcus pneumoniae?

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

Correct Answer: C

Explanation: The most common cause of pneumonia is bacteria Streptococcus pneumoniae.

16. Which of the following is NOT a function of the nasal cavity?

(A) Warming air
(B) Moistening air
(C) Filtering air
(D) Producing sound

Correct Answer: D

Explanation: Sound is produced by the larynx, not the nasal cavity.

17. What is the role of cilia in the respiratory system?

(A) Sweep mucus and trapped particles towards the pharynx
(B) Produce mucus
(C) Exchange gases
(D) Produce sound

Correct Answer: A

Explanation: Sweep mucus and trapped particles towards the pharynx — this correctly answers the question.

18. Which of the following is the correct pathway of air?

(A) Nose → Larynx → Pharynx → Trachea → Bronchi → Bronchioles → Alveoli
(B) Nose → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli
(C) Nose → Pharynx → Trachea → Larynx → Bronchi → Bronchioles → Alveoli
(D) Nose → Trachea → Pharynx → Larynx → Bronchi → Bronchioles → Alveoli

Correct Answer: B

Explanation: Nose → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli — this correctly answers the question.

19. What is the function of the C-shaped cartilage rings in the trachea?

(A) Produce mucus
(B) Exchange gases
(C) Keep the trachea open
(D) Produce sound

Correct Answer: C

Explanation: Keep the trachea open — this correctly answers the question.

20. Which of the following is a symptom of asthma?

(A) Cough with blood
(B) Chest pain
(C) Weight loss
(D) Wheezing

Correct Answer: D

Explanation: Wheezing — this correctly answers the question.

21. What is the main cause of chronic bronchitis?

(A) Smoking
(B) Viral infection
(C) Bacteria
(D) Allergy

Correct Answer: A

Explanation: Chronic bronchitis is most commonly caused by smoking.

22. Which of the following is a treatment for pneumonia?

(A) Bronchodilators
(B) Antibiotics
(C) Surgery
(D) Radiation

Correct Answer: B

Explanation: Antibiotics are prescribed for bacterial pneumonia.

23. What is the function of the pleural fluid?

(A) Exchange gases
(B) Produce mucus
(C) Reduce friction between lungs and chest wall
(D) Keep the trachea open

Correct Answer: C

Explanation: Reduce friction between lungs and chest wall — this correctly answers the question.

24. Which of the following is NOT a symptom of lung cancer?

(A) Cough
(B) Weight loss
(C) Chest pain
(D) Increased appetite

Correct Answer: D

Explanation: Increased appetite — this correctly answers the question.

25. What is the main cause of lung cancer?

(A) Tobacco smoke
(B) Viral infection
(C) Bacteria
(D) Allergy

Correct Answer: A

Explanation: Tobacco smoke is the main cause of lung cancer.

B. Less Important / Secondary Topics

26. Which of the following is a function of the alveoli?

(A) Exchange gases
(B) Produce sound
(C) Filter air
(D) Warm air

Correct Answer: A

Explanation: Alveoli are the site of gas exchange in the lungs.

27. What happens to the ribs during inspiration?

(A) They move down and in
(B) They move up and out

(C) They remain stationary
(D) They move down and out

Correct Answer: B

Explanation: They move up and out — this correctly answers the question.

28. Which of the following is a symptom of emphysema?

(A) Chest pain
(B) Fever
(C) Increased breathlessness
(D) Cough with blood

Correct Answer: C

Explanation: The main sign of emphysema is increasing breathlessness.

29. What is the function of the epiglottis?

(A) Produce sound
(B) Exchange gases
(C) Filter air
(D) Prevent food from entering the trachea

Correct Answer: D

Explanation: The epiglottis prevents food from entering the glottis during swallowing.

30. Which of the following is a treatment for asthma?

(A) Bronchodilators
(B) Antibiotics
(C) Surgery
(D) Radiation

Correct Answer: A

Explanation: Mild attacks of asthma are controlled with bronchodilators that dilate the airway.

31. What is the function of the goblet cells in the respiratory system?

(A) Exchange gases
(B) Produce mucus
(C) Produce sound
(D) Filter air

Correct Answer: B

Explanation: Goblet cells produce sticky fluid called mucus.

32. Which of the following is a symptom of pneumonia?

(A) Wheezing
(B) Increased appetite
(C) Fever
(D) Weight gain

Correct Answer: C

Explanation: Fever, shaking chills, and chest pain are symptoms of pneumonia.

33. Which of the following is NOT a part of the air passageway?

(A) Nose
(B) Pharynx
(C) Larynx
(D) Alveoli

Correct Answer: D

Explanation: Alveoli are part of the lungs, not the air passageway.

34. What is the function of the intercostal muscles?

(A) Move the ribs during breathing
(B) Exchange gases

(C) Produce mucus
(D) Produce sound

Correct Answer: A

Explanation: Move the ribs during breathing — this correctly answers the question.

35. Which of the following is a risk factor for lung cancer?

(A) Regular exercise
(B) Air pollution
(C) Healthy diet
(D) Normal weight

Correct Answer: B

Explanation: Air pollution — this correctly answers the question.

36. A patient has a condition where the alveoli walls break down. What is the most likely effect?

(A) Increased surface area for gas exchange
(B) Increased mucus production
(C) Decreased surface area for gas exchange
(D) Increased lung elasticity

Correct Answer: C

Explanation: Breakdown of alveoli walls decreases the total surface area for gaseous exchange.

37. A person has a blocked bronchiole. What is the most likely effect?

(A) Increased airflow to alveoli
(B) Increased gas exchange
(C) Increased mucus production
(D) Reduced airflow to alveoli

Correct Answer: D

Explanation: Reduced airflow to alveoli — this correctly answers the question.

38. Which of the following would increase the rate of breathing?

(A) Exercise
(B) Resting
(C) Sleeping
(D) Meditating

Correct Answer: A

Explanation: Exercise — this correctly answers the question.

39. A patient has a condition where the epiglottis does not function properly. What is the most likely effect?

(A) Reduced oxygen intake
(B) Food entering the trachea
(C) Reduced carbon dioxide removal
(D) Increased mucus production

Correct Answer: B

Explanation: The epiglottis prevents food from entering the trachea. If it does not function properly, food may enter the trachea, causing choking.

40. Which of the following is the correct order of the phases of breathing?

(A) Expiration → Inspiration
(B) Inspiration → Inspiration
(C) Inspiration → Expiration
(D) Expiration → Expiration

Correct Answer: C

Explanation: Inspiration → Expiration — this correctly answers the question.

41. A person is breathing rapidly. What is the most likely reason?

(A) Decreased oxygen demand
(B) Increased carbon dioxide in blood
(C) Decreased carbon dioxide in blood
(D) Increased oxygen demand

Correct Answer: D

Explanation: Rapid breathing occurs when there is increased oxygen demand, such as during exercise.

42. Which of the following statements about the trachea is correct?

(A) It has C-shaped rings of cartilage
(B) It has complete rings of cartilage
(C) It has no cartilage
(D) It has irregular plates of cartilage

Correct Answer: A

Explanation: The trachea is held open by C-shaped rings of cartilage.

43. A patient has a condition where the alveoli fill with fluid. What is the most likely effect?

(A) Increased gas exchange
(B) Decreased gas exchange
(C) Increased mucus production
(D) Increased lung elasticity

Correct Answer: B

Explanation: Fluid in the alveoli would impair gas exchange, as in pneumonia.

44. Which of the following is the correct composition of expired air?

(A) 21% oxygen, 0.04% carbon dioxide
(B) 16% oxygen, 0.04% carbon dioxide
(C) 16% oxygen, 4% carbon dioxide
(D) 21% oxygen, 4% carbon dioxide

Correct Answer: C

Explanation: 16% oxygen, 4% carbon dioxide — this correctly answers the question.

45. A person has a condition where the cilia in the respiratory tract are damaged. What is the most likely effect?

(A) Increased mucus removal
(B) Increased gas exchange
(C) Increased oxygen intake
(D) Reduced mucus removal

Correct Answer: D

Explanation: Reduced mucus removal — this correctly answers the question.

46. Which of the following is the correct pathway of air during expiration?

(A) Alveoli → Bronchioles → Bronchi → Trachea → Larynx → Pharynx → Nose
(B) Alveoli → Bronchi → Bronchioles → Trachea → Larynx → Pharynx → Nose
(C) Alveoli → Bronchioles → Trachea → Bronchi → Larynx → Pharynx → Nose
(D) Alveoli → Trachea → Bronchi → Bronchioles → Larynx → Pharynx → Nose

Correct Answer: A

Explanation: During expiration, air flows from alveoli through bronchioles, bronchi, trachea, larynx, pharynx, and out through the nose.

47. A patient has a condition where the diaphragm is paralyzed. What is the most likely effect?

(A) Increased breathing rate
(B) Reduced breathing capacity
(C) Increased oxygen intake
(D) Increased carbon dioxide removal

Correct Answer: B

Explanation: The diaphragm is essential for breathing. Paralysis would reduce breathing capacity.

48. Which of the following statements about smoking is correct?

(A) It improves lung function
(B) It increases oxygen supply
(C) It damages the cilia in the respiratory tract
(D) It reduces the risk of lung cancer

Correct Answer: C

Explanation: It damages the cilia in the respiratory tract — this correctly answers the question.

49. Which of the following would decrease the risk of respiratory diseases?

(A) Smoking
(B) Air pollution
(C) Exposure to dust
(D) Regular exercise

Correct Answer: D

Explanation: Regular exercise — this correctly answers the question.

50. A person has a condition where the bronchi are inflamed and produce excess mucus. What is the most likely diagnosis?

(A) Bronchitis
(B) Emphysema
(C) Pneumonia
(D) Asthma

Correct Answer: A

Explanation: Bronchitis is the inflammation of the bronchi, causing excess mucus production and cough.