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Chemistry Grade 10 — Chapter 2

Matter

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

A. Important / Main Topics

1. A state change (or phase transition) is the transition of matter from one state to another:

(A) Without a temperature change
(B) With a temperature change
(C) With a pressure change
(D) Without any energy change

Correct Answer: A

Explanation: A state change (or phase transition) is the transition of matter from one state to another Without a temperature change.

2. During a phase change, the temperature remains constant because:

(A) The kinetic energy of the particles increases
(B) The pressure changes
(C) The potential energy of the particles changes
(D) The particles stop moving

Correct Answer: B

Explanation: The correct statement is that the potential energy of the particles changes; temperature remains constant because kinetic energy is unchanged.

3. Which process involves a solid turning directly into a gas without passing through the liquid state?

(A) Melting
(B) Boiling
(C) Sublimation
(D) Condensation

Correct Answer: C

Explanation: Sublimation is the process in which a solid turns directly into a gas without passing through the liquid state.

4. Which of the following is an example of sublimation?

(A) Ice melting into water
(B) Water boiling into steam
(C) Steam condensing into water
(D) Dry ice turning into carbon dioxide gas

Correct Answer: D

Explanation: Dry ice (solid CO□) turning into CO□ gas is an example of sublimation.

5. Evaporation differs from boiling because:

(A) Evaporation occurs at the surface of a liquid at any temperature
(B) Boiling occurs only at the surface
(C) Evaporation requires a fixed temperature
(D) Boiling occurs at any temperature

Correct Answer: A

Explanation: Evaporation differs from boiling because Evaporation occurs at the surface of a liquid at any temperature.

6. According to Boyle's Law, for a fixed amount of gas at constant temperature:

(A) Volume is directly proportional to pressure

(B) Volume is inversely proportional to pressure
(C) Volume is directly proportional to temperature
(D) Volume is inversely proportional to the number of moles

Correct Answer: B

Explanation: Boyle's Law: Volume is inversely proportional to pressure at constant temperature.

7. Which law states that the volume of a gas is directly proportional to its absolute temperature at constant pressure?

(A) Boyle's Law
(B) Avogadro's Law
(C) Charles's Law
(D) Graham's Law

Correct Answer: C

Explanation: Charles's Law: Volume is directly proportional to absolute temperature at constant pressure.

8. According to Avogadro's Law, for a gas at constant temperature and pressure, the volume of the gas is directly proportional to:

(A) The pressure of the gas
(B) The molar mass of the gas
(C) The density of the gas
(D) The number of moles of gas

Correct Answer: D

Explanation: Avogadro's Law: Volume is directly proportional to the number of moles of gas at constant temperature and pressure.

9. Which factor affects the rate of diffusion of gases?

(A) Both molecular mass and temperature
(B) Molecular mass only
(C) Temperature only
(D) Neither molecular mass nor temperature

Correct Answer: A

Explanation: Both molecular mass and temperature — this correctly answers the question.

10. The rate of diffusion of a gas is inversely proportional to:

(A) Its molar mass
(B) The square root of its molar mass
(C) Its temperature
(D) Its pressure

Correct Answer: B

Explanation: Graham's Law: The rate of diffusion is inversely proportional to the square root of its molar mass.

11. Solid air fresheners rely on which process to release fragrance into the air?

(A) Condensation
(B) Deposition
(C) Sublimation
(D) Freezing

Correct Answer: C

Explanation: Sublimation — this correctly answers the question.

12. In a cooling curve, the region where the temperature remains constant represents:

(A) The substance heating up in one state
(B) The substance cooling down in one state
(C) The substance reaching absolute zero
(D) A phase change

Correct Answer: D

Explanation: In a cooling curve, the region where the temperature remains constant represents A phase change.

13. During condensation, the particles in a gas:

(A) Lose energy and move slower
(B) Gain energy and move faster
(C) Gain energy and move slower
(D) Lose energy and move faster

Correct Answer: A

Explanation: During condensation, the particles in a gas Lose energy and move slower.

14. Boiling occurs at:

(A) Any temperature
(B) A fixed temperature called the boiling point
(C) Any pressure
(D) Only at room temperature

Correct Answer: B

Explanation: Boiling occurs at a fixed temperature called the boiling point.

15. Which of the following is an example of deposition?

(A) Ice melting into water
(B) Water boiling into steam
(C) Snow forming from water vapour
(D) Steam condensing into water

Correct Answer: C

Explanation: Snow forming from water vapour is an example of deposition (gas → solid).

16. During a phase change from liquid to gas, which of the following statements is correct?

(A) The kinetic energy of the particles increases
(B) The particles stop moving
(C) The temperature of the substance increases
(D) The potential energy of the particles changes

Correct Answer: D

Explanation: During a phase change from liquid to gas, the potential energy of the particles changes, not the kinetic energy.

17. In the electrolysis of dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions because of:

(A) The concentration effect and overpotential of chlorine gas
(B) The colour of the solution
(C) The temperature of the solution
(D) The type of electrode used

Correct Answer: A

Explanation: In dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions due to the concentration effect and the overpotential of chlorine gas.

18. A gas at 1 atm occupies 24 dm^3. If the pressure is increased to 3 atm at constant temperature, the new volume will be:

(A) 72 dm^3
(B) 8 dm^3
(C) 24 dm^3
(D) 12 dm^3

Correct Answer: B

Explanation: A gas at 1 atm occupies 24 dm^3. If the pressure is increased to 3 atm at constant temperature, the new volume will be 8 dm^3.

19. Which of the following is an example of deposition?

(A) Ice melting into water

(B) Water boiling into steam
(C) Snow forming from water vapour
(D) Steam condensing into water

Correct Answer: C

Explanation: Snow forming from water vapour is an example of deposition (gas → solid).

20. The rate of diffusion of a gas is inversely proportional to the square root of its molar mass. This is known as:

(A) Boyle's Law
(B) Charles's Law
(C) Avogadro's Law
(D) Graham's Law

Correct Answer: D

Explanation: Graham's Law states that the rate of diffusion is inversely proportional to the square root of the molar mass.

21. During a phase change, the temperature remains constant because:

(A) The kinetic energy of the particles remains constant
(B) The potential energy of the particles remains constant
(C) The particles stop moving
(D) The pressure changes

Correct Answer: A

Explanation: During a phase change, temperature remains constant because kinetic energy remains constant while potential energy changes.

22. A sample of gas occupies 500 cm³ at 1 atm. If the pressure is increased to 2.5 atm at constant temperature, the new volume is:

(A) 1250 cm³
(B) 200 cm³
(C) 250 cm³
(D) 500 cm³

Correct Answer: B

Explanation: A sample of gas occupies 500 cm³ at 1 atm. If the pressure is increased to 2.5 atm at constant temperature, the new volume is 200 cm³.

23. Which of the following is NOT a factor that affects the rate of diffusion of gases?

(A) Molecular mass
(B) Temperature
(C) Colour of the gas
(D) Kinetic energy of the particles

Correct Answer: C

Explanation: Colour of the gas — this correctly answers the question.

24. According to Avogadro's Law, if the number of moles of a gas is doubled at constant temperature and pressure, the volume:

(A) Halves
(B) Remains the same
(C) Becomes zero
(D) Doubles

Correct Answer: D

Explanation: According to Avogadro's Law, if the number of moles is doubled, the volume doubles.

25. Sublimation is the process in which:

(A) A solid turns directly into a gas
(B) A solid turns into a liquid
(C) A liquid turns into a gas

(D) A gas turns directly into a solid

Correct Answer: A

Explanation: Sublimation is the process in which a solid turns directly into a gas.

B. Less Important / Secondary Topics

26. Which of the following is NOT a factor that affects the rate of diffusion of gases?

(A) Colour of the gas
(B) Molecular mass
(C) Temperature
(D) Kinetic energy of the particles

Correct Answer: A

Explanation: Colour of the gas — this correctly answers the question.

27. During a phase change from liquid to gas, which of the following statements is correct?

(A) The kinetic energy of the particles increases
(B) The potential energy of the particles changes
(C) The temperature of the substance increases
(D) The particles stop moving

Correct Answer: B

Explanation: During a phase change from liquid to gas, the potential energy of the particles changes.

28. In the electrolysis of dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions because of:

(A) The colour of the solution
(B) The temperature of the solution
(C) The concentration effect and overpotential of chlorine gas
(D) The type of electrode used

Correct Answer: C

Explanation: In dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions due to the concentration effect and the overpotential of chlorine gas.

29. A gas at 1 atm occupies 24 dm^3. If the pressure is increased to 3 atm at constant temperature, the new volume will be:

(A) 72 dm^3
(B) 24 dm^3
(C) 12 dm^3
(D) 8 dm^3

Correct Answer: D

Explanation: A gas at 1 atm occupies 24 dm^3. If the pressure is increased to 3 atm at constant temperature, the new volume will be 8 dm^3.

30. Which of the following is an example of deposition?

(A) Snow forming from water vapour
(B) Ice melting into water
(C) Water boiling into steam
(D) Steam condensing into water

Correct Answer: A

Explanation: Snow forming from water vapour is an example of deposition (gas → solid).

31. The rate of diffusion of a gas is inversely proportional to the square root of its molar mass. This is known as:

(A) Boyle's Law
(B) Graham's Law
(C) Charles's Law
(D) Avogadro's Law

Correct Answer: B

Explanation: Graham's Law states that the rate of diffusion is inversely proportional to the square root of the molar mass.

32. During a phase change, the temperature remains constant because:

(A) The potential energy of the particles remains constant
(B) The particles stop moving
(C) The kinetic energy of the particles remains constant
(D) The pressure changes

Correct Answer: C

Explanation: During a phase change, temperature remains constant because kinetic energy remains constant while potential energy changes.

33. A sample of gas occupies 500 cm³ at 1 atm. If the pressure is increased to 2.5 atm at constant temperature, the new volume is:

(A) 1250 cm³
(B) 250 cm³
(C) 500 cm³
(D) 200 cm³

Correct Answer: D

Explanation: A sample of gas occupies 500 cm³ at 1 atm. If the pressure is increased to 2.5 atm at constant temperature, the new volume is 200 cm³.

34. Which of the following is NOT a factor that affects the rate of diffusion of gases?

(A) Colour of the gas
(B) Molecular mass
(C) Kinetic energy of the particles
(D) Temperature

Correct Answer: A

Explanation: Colour of the gas — this correctly answers the question.

35. According to Avogadro's Law, if the number of moles of a gas is doubled at constant temperature and pressure, the volume:

(A) Halves
(B) Doubles
(C) Remains the same
(D) Becomes zero

Correct Answer: B

Explanation: According to Avogadro's Law, if the number of moles is doubled, the volume doubles.

36. A substance undergoes a phase change from liquid to gas. Which of the following statements is correct?

(A) The kinetic energy of the particles increases
(B) The temperature of the substance increases
(C) The potential energy of the particles changes
(D) The particles stop moving

Correct Answer: C

Explanation: During a phase change from liquid to gas, the potential energy of the particles changes.

37. In the electrolysis of dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions because of:

(A) The colour of the solution
(B) The temperature of the solution
(C) The type of electrode used
(D) The concentration effect and overpotential of chlorine gas

Correct Answer: D

Explanation: In dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions due to the concentration effect and the overpotential of chlorine gas.

38. A gas at 1 atm occupies 24 dm³. If the pressure is increased to 3 atm at constant temperature, the new volume will be:

(A) 8 dm³
(B) 72 dm³
(C) 24 dm³
(D) 12 dm³

Correct Answer: A

Explanation: A gas at 1 atm occupies 24 dm³. If the pressure is increased to 3 atm at constant temperature, the new volume will be 8 dm³.

39. Which of the following is an example of deposition?

(A) Ice melting into water
(B) Snow forming from water vapour
(C) Water boiling into steam
(D) Steam condensing into water

Correct Answer: B

Explanation: Snow forming from water vapour is an example of deposition (gas → solid).

40. The rate of diffusion of a gas is inversely proportional to the square root of its molar mass. This is known as:

(A) Boyle's Law
(B) Charles's Law
(C) Graham's Law
(D) Avogadro's Law

Correct Answer: C

Explanation: Graham's Law states that the rate of diffusion is inversely proportional to the square root of the molar mass.

41. During a phase change, the temperature remains constant because:

(A) The potential energy of the particles remains constant
(B) The particles stop moving
(C) The pressure changes
(D) The kinetic energy of the particles remains constant

Correct Answer: D

Explanation: During a phase change, temperature remains constant because kinetic energy remains constant while potential energy changes.

42. A sample of gas occupies 500 cm³ at 1 atm. If the pressure is increased to 2.5 atm at constant temperature, the new volume is:

(A) 200 cm³
(B) 1250 cm³
(C) 250 cm³
(D) 500 cm³

Correct Answer: A

Explanation: A sample of gas occupies 500 cm³ at 1 atm. If the pressure is increased to 2.5 atm at constant temperature, the new volume is 200 cm³.

43. Which of the following is NOT a factor that affects the rate of diffusion of gases?

(A) Molecular mass
(B) Colour of the gas
(C) Temperature
(D) Kinetic energy of the particles

Correct Answer: B

Explanation: Colour of the gas — this correctly answers the question.

44. According to Avogadro's Law, if the number of moles of a gas is doubled at constant temperature and pressure, the volume:

(A) Halves
(B) Remains the same
(C) Doubles
(D) Becomes zero

Correct Answer: C

Explanation: According to Avogadro's Law, if the number of moles is doubled, the volume doubles.

45. Sublimation is the process in which:

(A) A solid turns into a liquid
(B) A liquid turns into a gas
(C) A gas turns directly into a solid
(D) A solid turns directly into a gas

Correct Answer: D

Explanation: Sublimation is the process in which a solid turns directly into a gas.

46. A substance undergoes a phase change from liquid to gas. Which of the following statements is correct?

(A) The potential energy of the particles changes
(B) The temperature of the substance increases
(C) The kinetic energy of the particles increases
(D) The particles stop moving

Correct Answer: A

Explanation: During a phase change from liquid to gas, the potential energy of the particles changes.

47. In the electrolysis of dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions because of:

(A) The colour of the solution
(B) The concentration effect and overpotential of chlorine gas
(C) The temperature of the solution
(D) The type of electrode used

Correct Answer: B

Explanation: In dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions due to the concentration effect and the overpotential of chlorine gas.

48. A gas at 1 atm occupies 24 dm^3. If the pressure is increased to 3 atm at constant temperature, the new volume will be:

(A) 72 dm^3
(B) 24 dm^3
(C) 8 dm^3
(D) 12 dm^3

Correct Answer: C

Explanation: A gas at 1 atm occupies 24 dm^3. If the pressure is increased to 3 atm at constant temperature, the new volume will be 8 dm^3.

49. Which of the following is an example of deposition?

(A) Ice melting into water
(B) Water boiling into steam
(C) Steam condensing into water
(D) Snow forming from water vapour

Correct Answer: D

Explanation: Snow forming from water vapour is an example of deposition (gas → solid).

50. The rate of diffusion of a gas is inversely proportional to the square root of its molar mass. This is known as:

(A) Graham's Law
(B) Boyle's Law
(C) Charles's Law
(D) Avogadro's Law

Correct Answer: A

Explanation: Graham's Law states that the rate of diffusion is inversely proportional to the square root of the molar mass.