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Chemistry Grade 10 — Complete MCQs

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Chapters 1–13 (50 MCQs each) from supplied notes pack

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Chemistry Grade 10 — Chapter 1

History of Chemistry

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

A. Important / Main Topics

1. Which principle states that in a closed system, mass and energy cannot be created or destroyed?

(A) Principle of conservation of mass and energy
(B) Principle of controlled experiments
(C) Principle of peer review
(D) Principle of skepticism

Correct Answer: A

Explanation: The principle of conservation of mass and energy states that mass and energy cannot be created or destroyed in a closed system.

2. Who first showed the principle of conservation of mass and energy?

(A) Dmitri Mendeleev
(B) Antoine Lavoisier
(C) Ernest Rutherford
(D) J.J. Thomson

Correct Answer: B

Explanation: Antoine Lavoisier — this correctly answers the question.

3. In a controlled experiment, how many variables are changed at a time?

(A) Two
(B) Three
(C) One
(D) As many as needed

Correct Answer: C

Explanation: In a controlled experiment, one variable is changed at a time while others are kept constant.

4. The process by which scientific work is reviewed by other scientists before publication is called:

(A) Observation
(B) Skepticism
(C) Objectivity
(D) Peer review

Correct Answer: D

Explanation: Peer review is the process by which scientific work is reviewed by other scientists before publication.

5. In the 1700s, scientists believed that materials which could burn contained a substance called:

(A) Phlogiston
(B) Oxygen
(C) Hydrogen
(D) Nitrogen

Correct Answer: A

Explanation: In the 1700s, scientists believed that combustible materials contained a substance called "phlogiston.".

6. Which scientist proved that combustion happens because of oxygen combining with substances?

(A) J.J. Thomson
(B) Antoine Lavoisier
(C) Ernest Rutherford
(D) Dmitri Mendeleev

Correct Answer: B

Explanation: Antoine Lavoisier proved that combustion happens because of oxygen combining with substances.

7. The plum pudding model of the atom was proposed by:

(A) Ernest Rutherford
(B) Niels Bohr
(C) J.J. Thomson
(D) Dmitri Mendeleev

Correct Answer: C

Explanation: The plum pudding model of the atom was proposed by J.J. Thomson.

8. A 95% confidence interval means that:

(A) The results are 95% accurate
(B) There is a 5% chance the results are incorrect
(C) The experiment was repeated 95 times
(D) The scientist is 95% sure that the true value is within the given range

Correct Answer: D

Explanation: A 95% confidence interval means the scientist is 95% sure that the true value is within the given range.

9. Getting the same result when repeating an experiment under the same conditions is called:

(A) Repeatability
(B) Reproducibility
(C) Accuracy
(D) Precision

Correct Answer: A

Explanation: Repeatability is the ability to repeat an experiment under the same conditions.

10. Getting the same result when the experiment is done in different labs with different tools is called:

(A) Repeatability
(B) Reproducibility
(C) Accuracy
(D) Precision

Correct Answer: B

Explanation: Reproducibility is the ability to produce same or similar results under different conditions.

11. Which of the following is a scientific paradigm?

(A) A single theory that never changes
(B) A personal opinion of a scientist
(C) A set of ideas, methods, and rules that guide scientists
(D) A hypothesis that has been tested once

Correct Answer: C

Explanation: A scientific paradigm is a set of ideas, methods, and rules that guide scientists in their research.

12. The main component of natural gas is:

(A) Ethane
(B) Propane
(C) Butane
(D) Methane

Correct Answer: D

Explanation: The main component of natural gas is methane.

13. Which of the following is NOT a fossil fuel?

(A) Biogas
(B) Coal
(C) Natural gas
(D) Petroleum

Correct Answer: A

Explanation: Biogas is not a fossil fuel; it is a renewable energy source.

14. A p-value of 0.01 indicates that:

(A) There is a 99% chance the result is random
(B) There is a 1% chance the result is random
(C) The result is 1% accurate
(D) The experiment was repeated once

Correct Answer: B

Explanation: A p-value of 0.01 indicates that there is only a 1% chance that the result is random.

15. The standard deviation measures:

(A) How accurate the average is
(B) The probability that the result is random
(C) How spread out the data is
(D) The range of the confidence interval

Correct Answer: C

Explanation: Standard deviation measures how spread out the individual measurements are around the average.

16. Dmitri Mendeleev created the periodic table by observing patterns in the properties of elements. This is an example of:

(A) Controlled experiments
(B) Peer review
(C) Being objective
(D) Using observations and logical thinking

Correct Answer: D

Explanation: Dmitri Mendeleev created the periodic table by observing patterns in the properties of elements. This is an example of Using observations and logical thinking.

17. In science, results must come from facts, not from opinions or biases. This is called:

(A) Objectivity
(B) Skepticism
(C) Peer review
(D) Controlled experiments

Correct Answer: A

Explanation: Objectivity means results must come from facts, not from opinions or biases.

18. Scientists are naturally skeptical and always double-check new discoveries. This is important because:

(A) It slows down scientific progress
(B) It ensures that only trustworthy information becomes part of science
(C) It prevents scientists from working together
(D) It makes experiments more expensive

Correct Answer: B

Explanation: Skepticism helps ensure that only trustworthy information becomes part of science.

19. Which of the following is an example of a controlled experiment?

(A) Changing temperature and pressure at the same time
(B) Changing nothing and observing
(C) Changing only temperature while keeping other variables constant
(D) Changing all variables randomly

Correct Answer: C

Explanation: In a controlled experiment, one variable is changed at a time while keeping all other variables constant.

20. The phlogiston theory was replaced by:

(A) The atomic theory

(B) The quantum mechanical model
(C) The periodic table
(D) The oxygen theory of combustion

Correct Answer: D

Explanation: The phlogiston theory was replaced by The oxygen theory of combustion.

21. Rutherford's gold foil experiment led to the discovery of:

(A) A small, dense, positively charged nucleus
(B) Electrons scattered in a positive soup
(C) Energy levels in atoms
(D) The quantum mechanical model

Correct Answer: A

Explanation: Rutherford's gold foil experiment showed that atoms have a small, dense, positively charged nucleus.

22. Which of the following statements about a scientific paradigm is correct?

(A) A paradigm never changes
(B) A paradigm is a set of ideas, methods, and rules that guide scientists
(C) A paradigm is a single theory
(D) A paradigm is only used in physics

Correct Answer: B

Explanation: A paradigm is a set of ideas, methods, and rules that guide scientists in their research.

23. A scientific paradigm is replaced when:

(A) Scientists get bored with the old paradigm
(B) A single scientist disagrees with it
(C) New evidence challenges the existing paradigm
(D) The government decides to change it

Correct Answer: C

Explanation: A paradigm is replaced when new evidence challenges the existing paradigm.

24. If a chemist measures the melting point of a substance and finds the average is 120°C with a standard deviation of 0.5°C, this means:

(A) The results are inconsistent
(B) The average is inaccurate
(C) The measurement is unreliable
(D) The results are consistent

Correct Answer: D

Explanation: A small standard deviation (0.5°C) means the results are consistent.

25. Which of the following is NOT a characteristic of the scientific community?

(A) Reliance on personal opinions
(B) Use of empirical evidence
(C) Logical reasoning
(D) Peer review

Correct Answer: A

Explanation: Reliance on personal opinions — this correctly answers the question.

B. Less Important / Secondary Topics

26. When a scientist tests a new medicine, they change only the dose while keeping temperature, pressure, and other conditions the same. This is an example of:

(A) A controlled experiment
(B) Peer review
(C) Being objective
(D) Skepticism

Correct Answer: A

Explanation: Changing one variable at a time while keeping others constant is a controlled experiment.

27. A chemist first believes there is a 60% chance a reaction happens in a certain way. After new data, their confidence rises to 80%. This is an example of:

(A) Confidence interval
(B) Bayesian probability
(C) Standard deviation
(D) P-value

Correct Answer: B

Explanation: A chemist first believes there is a 60% chance a reaction happens in a certain way. After new data, their confidence rises to 80%. This is an example of Bayesian probability.

28. Which of the following was replaced by the modern concepts of oxidation and reduction?

(A) Atomic theory
(B) Quantum mechanics
(C) Phlogiston theory
(D) Periodic table

Correct Answer: C

Explanation: Phlogiston theory — this correctly answers the question.

29. In the electrolysis of a compound, the discharge of ions is influenced by their position in the electrochemical series and by their:

(A) Colour
(B) Density
(C) Smell
(D) Concentration

Correct Answer: D

Explanation: The discharge of ions during electrolysis is influenced by their position in the electrochemical series and by their concentration.

30. Which of the following best describes the relationship between repeatability and reproducibility?

(A) Repeatability involves the same conditions; reproducibility involves different conditions
(B) They are the same thing
(C) Repeatability involves different conditions; reproducibility involves the same conditions
(D) Neither is important in science

Correct Answer: A

Explanation: Repeatability involves the same conditions; reproducibility involves different conditions — this correctly answers the question.

31. Why is it important for a scientific paradigm to be based on empirical evidence and logical reasoning rather than personal opinions?

(A) To make science more difficult
(B) To ensure scientific knowledge is reliable
(C) To slow down scientific progress
(D) To prevent scientists from working together

Correct Answer: B

Explanation: Empirical evidence and logical reasoning ensure that scientific knowledge is reliable.

32. 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).

33. Which of the following statements about a scientific paradigm is INCORRECT?

(A) A paradigm helps scientists understand the natural world
(B) A paradigm is replaced when new evidence challenges it
(C) A paradigm guides research and development
(D) A paradigm is a single theory that never changes

Correct Answer: D

Explanation: A paradigm is not a single theory that never changes; it is a set of ideas, methods, and rules that can be replaced when new evidence challenges it.

34. A chemist measures the concentration of a solution as 0.250 M ± 0.005 M. The uncertainty in this measurement is:

(A) 0.005 M
(B) 0.250 M
(C) 0.255 M
(D) 0.245 M

Correct Answer: A

Explanation: The uncertainty in the measurement is ± 0.005 M.

35. Which of the following is NOT a part of the scientific community's shared principles?

(A) Use of empirical evidence
(B) Reliance on personal beliefs
(C) Logical reasoning
(D) Peer review

Correct Answer: B

Explanation: Reliance on personal beliefs — this correctly answers the question.

36. If a chemist measures the melting point of a substance several times in the same lab and gets the same result each time, the experiment is:

(A) Reproducible
(B) Accurate
(C) Repeatable
(D) Precise

Correct Answer: C

Explanation: If a chemist measures the melting point of a substance several times in the same lab and gets the same result each time, the experiment is Repeatable.

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. Which of the following best describes the relationship between a scientific paradigm and scientific progress?

(A) Paradigms guide scientific progress until they are replaced by better ones
(B) Paradigms prevent scientific progress
(C) Paradigms are never replaced
(D) Paradigms are only important in physics

Correct Answer: A

Explanation: Paradigms guide scientific progress until they are replaced by better ones.

39. A p-value of 0.05 means:

(A) There is a 5% chance the result is correct
(B) There is a 5% chance the result is random
(C) The result is 5% accurate
(D) The experiment was repeated 5 times

Correct Answer: B

Explanation: A p-value of 0.05 means there is a 5% chance the result is random.

40. In the electrolysis of concentrated aqueous NaCl, the product at the anode is:

(A) Hydrogen gas
(B) Oxygen gas
(C) Chlorine gas
(D) Sodium metal

Correct Answer: C

Explanation: In the electrolysis of concentrated aqueous NaCl, chlorine gas is produced at the anode.

41. A student says, "A 95% confidence level means the results are 95% accurate." Is the student correct?

(A) Yes, because 95% confidence means 95% accuracy
(B) Yes, because the experiment was repeated 95 times
(C) No, because 95% confidence means there is a 5% chance the result is wrong
(D) No, because 95% confidence means 95% of such intervals would contain the true value

Correct Answer: D

Explanation: A 95% confidence level means that 95% of such intervals would contain the true value. It does not mean "95% accurate.".

42. Which of the following statements about the phlogiston theory is correct?

(A) It stated that burning releases phlogiston
(B) It stated that burning releases oxygen
(C) It stated that burning absorbs phlogiston
(D) It stated that burning produces water

Correct Answer: A

Explanation: The phlogiston theory stated that combustible materials contained "phlogiston" that was released when burned.

43. A chemist measures the concentration of a solution as 0.50 M with a standard deviation of 0.02 M and a standard error of 0.005 M. What do these values tell us about the data?

(A) The data is inconsistent and the average is inaccurate
(B) The data is consistent and the average is accurate
(C) The data is inconsistent and the average is accurate
(D) The data is consistent and the average is inaccurate

Correct Answer: B

Explanation: A small standard deviation (0.02 M) means the data is consistent. A small standard error (0.005 M) means the average is accurate.

44. Why is it important for a scientific paradigm to be based on empirical evidence and logical reasoning rather than personal opinions?

(A) To make science more difficult
(B) To slow down scientific progress
(C) To ensure scientific knowledge is reliable
(D) To prevent scientists from working together

Correct Answer: C

Explanation: Empirical evidence and logical reasoning ensure that scientific knowledge is reliable.

45. Which of the following is an example of a paradigm shift in chemistry?

(A) The discovery of the electron
(B) The invention of the microscope

(C) The discovery of the periodic table
(D) The replacement of the phlogiston theory by the oxygen theory of combustion

Correct Answer: D

Explanation: The replacement of the phlogiston theory by the oxygen theory of combustion is a paradigm shift.

46. A chemist performs an experiment to determine the melting point of a new compound. The results of five trials are: 120.1°C, 120.0°C, 120.2°C, 120.1°C, 120.1°C. The average melting point is:

(A) 120.1°C
(B) 120.0°C
(C) 120.2°C
(D) 120.3°C

Correct Answer: A

Explanation: A chemist performs an experiment to determine the melting point of a new compound. The results of five trials are: 120.1°C, 120.0°C, 120.2°C, 120.1°C, 120.1°C. The average melting point is 120.1°C.

47. If the accepted value for the melting point is 120.0°C, is the measurement accurate?

(A) No, because the average is 120.1°C
(B) Yes, because the average is very close to the accepted value
(C) No, because the standard deviation is high
(D) Yes, because the experiment was repeated 5 times

Correct Answer: B

Explanation: The average melting point (120.1°C) is very close to the accepted value (120.0°C). The small difference is within the expected range of experimental error.

48. Which of the following best describes the relationship between scientific paradigms and scientific progress?

(A) Paradigms prevent scientific progress
(B) Paradigms are never replaced
(C) Paradigms guide scientific progress until they are replaced by better ones
(D) Paradigms are only important in physics

Correct Answer: C

Explanation: Paradigms guide scientific progress until they are replaced by better ones.

49. A chemist measures the concentration of a solution as 0.250 M ± 0.005 M. What does this uncertainty tell us about the reliability of the measurement?

(A) The measurement is 100% reliable
(B) The measurement is unreliable
(C) The true value is exactly 0.250 M
(D) The true value is close to 0.250 M

Correct Answer: D

Explanation: The uncertainty tells us that the true value is close to 0.250 M. It indicates how reliable the measurement is.

50. Which of the following statements about scientific paradigms is correct?

(A) A paradigm is a set of ideas, methods, and rules that guide scientists
(B) A paradigm is a single theory that never changes
(C) A paradigm is only used in physics
(D) A paradigm prevents scientific progress

Correct Answer: A

Explanation: A paradigm is a set of ideas, methods, and rules that guide scientists in their research.

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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.

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Chemistry Grade 10 — Chapter 3

Stoichiometry

by Public Library

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

A. Important / Main Topics

1. The study of relative amounts of the substances involved in a chemical reaction is known as:

(A) Stoichiometry
(B) Electrochemistry
(C) Thermodynamics
(D) Kinetics

Correct Answer: A

Explanation: Stoichiometry is the study of relative amounts of substances involved in a chemical reaction.

2. The word "Stoichiometry" comes from the Greek word "Stoichen" meaning:

(A) Measure
(B) Element
(C) Reaction
(D) Compound

Correct Answer: B

Explanation: "Stoichen" means element, and "Metron" means measure.

3. One mole of any gas at RTP occupies a volume of:

(A) 22.4 dm^3
(B) 1 dm^3
(C) 24 dm^3
(D) 1000 dm^3

Correct Answer: C

Explanation: One mole of any gas at RTP occupies a volume of 24 dm^3.

4. The reactant that is completely consumed in a reaction is called the:

(A) Excess reactant
(B) Catalyst
(C) Product
(D) Limiting reactant

Correct Answer: D

Explanation: The limiting reactant is the reactant that is completely consumed in a reaction.

5. Percentage yield is calculated by:

(A) (Actual/Theoretical) × 100
(B) (Theoretical/Actual) × 100
(C) (Actual × Theoretical) × 100
(D) (Theoretical - Actual) × 100

Correct Answer: A

Explanation: Percentage yield is calculated by (Actual/Theoretical) × 100.

6. The empirical formula of a compound tells you:

(A) The actual number of atoms in a molecule
(B) The simplest ratio of elements in the compound
(C) The molar mass of the compound
(D) The percentage composition of the compound

Correct Answer: B

Explanation: The empirical formula of a compound tells you The simplest ratio of elements in the compound.

7. The amount of pure substance in a sample represented as a percentage of the sample's total mass is called:

(A) Percentage yield
(B) Percentage composition
(C) Percentage purity
(D) Percentage error

Correct Answer: C

Explanation: Percentage purity is the amount of pure substance in a sample as a percentage of total mass.

8. Molarity is defined as the number of moles of solute dissolved per:

(A) g of solvent
(B) mol of solvent
(C) cm^3 of solution
(D) dm^3 of solution

Correct Answer: D

Explanation: Molarity is defined as the number of moles of solute dissolved per dm^3 of solution.

9. The strength of a solution is expressed in:

(A) g/dm^3 or g/cm^3
(B) mol/dm^3
(C) mol/kg
(D) g/mol

Correct Answer: A

Explanation: Strength is expressed in g/dm^3 or g/cm^3.

10. The formula for dilution is:

(A) M□ / V□ = M□ / V□
(B) M□ × V□ = M□ × V□
(C) M□ + V□ = M□ + V□
(D) M□ × M□ = V□ × V□

Correct Answer: B

Explanation: The dilution formula is M□V□ = M□V□.

11. In a titration, the point at which the reaction is complete is called the:

(A) Start point
(B) Midpoint
(C) End point
(D) Equivalence point

Correct Answer: C

Explanation: The point at which the reaction is complete is called the end point.

12. The SI unit to express the amount of a substance is:

(A) Gram
(B) Litre
(C) Kelvin
(D) Mole

Correct Answer: D

Explanation: The mole is the SI unit to express the amount of a substance (symbol: mol).

13. One mole of H□O (molecule) is equal to:

(A) 18 g
(B) 16 g
(C) 32 g
(D) 44 g

Correct Answer: A

Explanation: One mole of H□O (molecule) is equal to 18 g.

14. Which of the following is the correct formula to calculate the number of moles?

(A) n = m × M
(B) n = fracmM
(C) n = m + M
(D) n = m - M

Correct Answer: B

Explanation: Number of moles n = fracmM, where m is mass and M is molar mass.

15. The percentage composition of an element in a compound is calculated by:

(A) (molar mass / mass of element) × 100
(B) (mass of element × molar mass) × 100
(C) (mass of element / molar mass) × 100
(D) (molar mass - mass of element) × 100

Correct Answer: C

Explanation: The percentage composition of an element in a compound is calculated by (mass of element / molar mass) × 100.

16. In the reaction 2H□ + O□ → 2H□O, how many moles of H□ are needed to react with 3 moles of O□?

(A) 3 moles
(B) 9 moles
(C) 12 moles
(D) 6 moles

Correct Answer: D

Explanation: 6 moles — this correctly answers the question.

17. One mole of any gas at RTP occupies 24 dm³. What volume will 2.5 moles of chlorine gas occupy at RTP?

(A) 60 dm³
(B) 24 dm³
(C) 48 dm³
(D) 2.5 dm³

Correct Answer: A

Explanation: 60 dm³ — this correctly answers the question.

18. In the reaction Zn + H□SO□ → ZnSO□ + H□, if 200 g of Zn reacts with 200 g of H□SO□, which is the limiting reactant?

(A) Zn
(B) H□SO□
(C) Both are limiting
(D) Neither is limiting

Correct Answer: B

Explanation: Moles of Zn = 200/65.4 = 3.06; moles of H□SO□ = 200/98 = 2.04. H□SO□ produces fewer moles of product, so it is the limiting reactant.

19. A solution contains 40 g of urea dissolved in 500 cm³ of solution. What is the molarity of this solution? (Molar mass of urea = 60 g/mol)

(A) 0.667 M
(B) 2.000 M
(C) 1.334 M
(D) 0.500 M

Correct Answer: C

Explanation: "1.334 M" is correct: it matches the idea asked in the question ("A solution contains 40 g of urea dissolved in 500 cm³ of solution. What is the molarity of this solution? (Molar mass of urea = 60 g/mol)"), while the

other choices do not.

20. The strength of a solution is expressed in g/dm³. If a solution contains 20 g of salt in 2 dm³, the strength is:

(A) 5 g/dm³
(B) 20 g/dm³
(C) 40 g/dm³
(D) 10 g/dm³

Correct Answer: D

Explanation: The strength of a solution is expressed in g/dm³. If a solution contains 20 g of salt in 2 dm³, the strength is 10 g/dm³.

21. In the dilution formula M□V□ = M□V□, if M□ = 4\ M, V□ = 125\ cm³, and V□ = 500\ cm³, what is M□?

(A) 1 M
(B) 0.5 M
(C) 2 M
(D) 4 M

Correct Answer: A

Explanation: 1 M — this correctly answers the question.

22. In a titration, 10 cm³ of NaOH is neutralized by 9.8 cm³ of 0.1 M HCl. What is the molarity of NaOH?

(A) 0.1 M
(B) 0.098 M
(C) 0.98 M
(D) 1.0 M

Correct Answer: B

Explanation: 0.098 M — this correctly answers the question.

23. A compound has 40% C, 6.7% H, and 53.3% O. What is its empirical formula?

(A) C□H□O□
(B) C□H□□O□
(C) CH□O
(D) C□H□O□

Correct Answer: C

Explanation: CH□O — this correctly answers the question.

24. If the theoretical yield of a reaction is 50 g and the actual yield is 40 g, what is the percentage yield?

(A) 125%
(B) 10%
(C) 90%
(D) 80%

Correct Answer: D

Explanation: 80% — this correctly answers the question.

25. One mole of any gas at RTP occupies 24 dm³. How many moles of oxygen are there in 50.0 dm³ of oxygen gas at RTP?

(A) 2.08 moles
(B) 1.0 mole
(C) 24 moles
(D) 50 moles

Correct Answer: A

Explanation: 2.08 moles — this correctly answers the question.

B. Less Important / Secondary Topics

26. In the reaction Zn + H□SO□ → ZnSO□ + H□, if 200 g of Zn reacts with 200 g of H□SO□, what is the mass of hydrogen produced?

(A) 4.08 g
(B) 2.04 g
(C) 6.12 g
(D) 8.16 g

Correct Answer: A

Explanation: 4.08 g — this correctly answers the question.

27. What is the percentage composition of hydrogen in water (H□O)?

(A) 88.89%
(B) 11.11%
(C) 50.00%
(D) 33.33%

Correct Answer: B

Explanation: 11.11% — this correctly answers the question.

28. What is the percentage composition of oxygen in water (H□O)?

(A) 11.11%
(B) 50.00%
(C) 88.89%
(D) 33.33%

Correct Answer: C

Explanation: 88.89% — this correctly answers the question.

29. A compound has the empirical formula CH□O and a molar mass of 180 g/mol. What is its molecular formula?

(A) CH□O
(B) C□H□O□
(C) C□H□O□
(D) C□H□□O□

Correct Answer: D

Explanation: C□H□□O□ — this correctly answers the question.

30. A solution contains 0.05 moles of KMnO□ in 600 cm³ of solution. What is the molarity?

(A) 0.083 M
(B) 0.05 M
(C) 0.6 M
(D) 0.3 M

Correct Answer: A

Explanation: 0.083 M — this correctly answers the question.

31. The percentage purity of a sample is 80%. If the total mass of the sample is 70 g, what is the mass of the pure compound?

(A) 14 g
(B) 56 g
(C) 70 g
(D) 80 g

Correct Answer: B

Explanation: 56 g — this correctly answers the question.

32. In a titration, 25.0 cm³ of 0.10 M NaOH neutralizes 20.0 cm³ of HCl. What is the concentration of HCl?

(A) 0.08 M
(B) 0.10 M
(C) 0.125 M

(D) 0.20 M

Correct Answer: C

Explanation: 0.125 M — this correctly answers the question.

33. What volume does 2.5 moles of chlorine gas occupy at RTP?

(A) 24 dm³
(B) 48 dm³
(C) 2.5 dm³
(D) 60 dm³

Correct Answer: D

Explanation: 60 dm³ — this correctly answers the question.

34. A compound has 26.4% C, 3.3% H, and 70.3% O by mass. What is its empirical formula?

(A) C□H□O□
(B) CH□O
(C) C□H□O□
(D) C□H□O□

Correct Answer: A

Explanation: C□H□O□ — this correctly answers the question.

35. In the reaction 2H□ + O□ → 2H□O, if 10 moles of H□ and 10 moles of O□ are reacted, which is the limiting reactant?

(A) O□
(B) H□
(C) Both are limiting
(D) Neither is limiting

Correct Answer: B

Explanation: H□ — this correctly answers the question.

36. A compound has the following composition: Carbon = 40%, Hydrogen = 6.7%, Oxygen = 53.3%. The molar mass of the compound is 180 g/mol. What is its molecular formula?

(A) CH□O
(B) C□H□O□
(C) C□H□□O□
(D) C□H□O□

Correct Answer: C

Explanation: C□H□□O□ — this correctly answers the question.

37. In an industry, copper metal was prepared by the reaction: Fe + CuSO□ → FeSO□ + Cu 1.274 g of CuSO□ when reacted with excess Fe gives a yield of 0.392 g of Cu. What is the percentage yield?

(A) 80.0%
(B) 70.0%
(C) 85.0%
(D) 77.3%

Correct Answer: D

Explanation: 77.3% — this correctly answers the question.

38. A compound has the following composition: 18.24 g Carbon, 0.51 g Hydrogen, and 16.91 g Fluorine. Its molar mass is 562.0 g/mol. What is its empirical formula?

(A) C□□H□F□
(B) C□H□F
(C) C□H□F□
(D) C□□H□F□□

Correct Answer: A

Explanation: C□□H□F□ — this correctly answers the question.

39. A compound has the following composition: 18.24 g Carbon, 0.51 g Hydrogen, and 16.91 g Fluorine. Its molar mass is 562.0 g/mol. What is its molecular formula?

(A) C□□H□F□
(B) C□□H□F□□
(C) C□H□F□
(D) C□H□F

Correct Answer: B

Explanation: C□□H□F□□ — this correctly answers the question.

40. An impure sample of calcium carbonate has a mass of 70 g. After purification, 56 g of calcium carbonate is recovered. What is the percentage purity of calcium carbonate?

(A) 56%
(B) 70%
(C) 80%
(D) 90%

Correct Answer: C

Explanation: 80% — this correctly answers the question.

41. A compound has the following composition: 26.4% C, 3.3% H, and 70.3% O by mass. What is its molecular formula if its molar mass is 91.0 g/mol?

(A) C□H□O□
(B) CH□O
(C) C□H□□O□
(D) C□H□O□

Correct Answer: D

Explanation: C□H□O□ — this correctly answers the question.

42. In the reaction 2H□ + O□ → 2H□O, if 10 moles of H□ and 10 moles of O□ are reacted, what is the maximum number of moles of H□O that can be produced?

(A) 10 moles
(B) 20 moles
(C) 5 moles
(D) 15 moles

Correct Answer: A

Explanation: H□ is the limiting reactant. From the.

43. A student is required to prepare a 0.5 mol/dm³ NaCl solution for an experiment. What mass of NaCl is needed to prepare 250 cm³ of the solution? (Molar mass of NaCl = 58.5 g/mol)

(A) 14.63 g
(B) 7.31 g
(C) 29.25 g
(D) 58.50 g

Correct Answer: B

Explanation: "7.31 g" is correct: it matches the idea asked in the question ("A student is required to prepare a 0.5 mol/dm³ NaCl solution for an experiment. What mass of NaCl is needed to prepare 250 cm³ of the solution? (Molar mass of NaCl = 58.5 g/mol)"), while the other choices do not.

44. In the reaction 2H□ + O□ → 2H□O, if 3.50 moles of methanol are burnt in oxygen, how many moles of water are produced?

(A) 3.50 moles
(B) 5.25 moles
(C) 7.00 moles
(D) 10.5 moles

Correct Answer: C

Explanation: 7.00 moles — this correctly answers the question.

45. In an experiment, 2.00 moles of CH□ were reacted with excess Cl□. As a result, 177.0 g of CCl□ is obtained. What is the percentage yield?

(A) 60.00%
(B) 70.00%
(C) 45.00%
(D) 57.47%

Correct Answer: D

Explanation: 57.47% — this correctly answers the question.

46. A compound has the following composition: 65.45% C, 5.45% H, and 29.09% O. Its molar mass is 110 g/mol. What is its molecular formula?

(A) C□H□O□
(B) C□H□O
(C) C□H□O
(D) C□H□O□

Correct Answer: A

Explanation: C□H□O□ — this correctly answers the question.

47. In the reaction CaCO□ + 2HCl → CaCl□ + CO□ + H□O, 68.1 g of CaCO□ is mixed with 51.6 g HCl. Which is the limiting reactant?

(A) CaCO□
(B) HCl
(C) Both are limiting
(D) Neither is limiting

Correct Answer: B

Explanation: Moles of CaCO□ = 68.1/100 = 0.681; moles of HCl = 51.6/36.5 = 1.414. From the.

48. Copper(II) sulphate is prepared by the reaction of dilute sulphuric acid on Copper(II) oxide. A student prepared 1.85 g of copper(II) sulphate. If its theoretical yield is 2.5 g, what is the percentage yield?

(A) 80%
(B) 85%
(C) 74%
(D) 90%

Correct Answer: C

Explanation: 74% — this correctly answers the question.

49. For the reaction C□H□ + 3O□ → 2CO□ + 2H□O, what number of moles of CO□ can be produced by the reaction of 0.480 mol of C□H□ and 1.08 mol of O□?

(A) 0.480 mol
(B) 0.960 mol
(C) 1.080 mol
(D) 0.720 mol

Correct Answer: D

Explanation: 0.720 mol — this correctly answers the question.

50. Given 48 g of methane (CH□) and excess oxygen, what volume of carbon dioxide gas is produced at room temperature and pressure?

(A) 72 dm^3
(B) 24 dm^3
(C) 48 dm^3
(D) 96 dm^3

Correct Answer: A

Explanation: 72 dm^3 — this correctly answers the question.

Chemistry Grade 10 — Chapter 4

Electrochemistry

by Public Library

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

A. Important / Main Topics

1. An electrochemical cell in which electrical energy is used to drive a chemical reaction is called:

(A) Electrolytic cell
(B) Galvanic cell
(C) Voltaic cell
(D) Daniel cell

Correct Answer: A

Explanation: An electrolytic cell uses electrical energy to drive a chemical reaction.

2. In an electrolytic cell, oxidation occurs at the:

(A) Cathode
(B) Anode
(C) Salt bridge
(D) Voltmeter

Correct Answer: B

Explanation: In an electrolytic cell, oxidation occurs at the Anode.

3. Which of the following is an example of an electrolyte?

(A) Urea
(B) Glucose
(C) NaCl
(D) Sucrose

Correct Answer: C

Explanation: NaCl is an electrolyte; it conducts electricity in molten or aqueous state.

4. During the electrolysis of molten sodium chloride, the product at the cathode is:

(A) Chlorine gas
(B) Hydrogen gas
(C) Oxygen gas
(D) Sodium metal

Correct Answer: D

Explanation: During the electrolysis of molten NaCl, sodium metal is produced at the cathode.

5. In a galvanic cell, electrons flow from:

(A) Anode to cathode
(B) Cathode to anode
(C) Salt bridge to electrodes
(D) Voltmeter to electrodes

Correct Answer: A

Explanation: Electrons flow from anode to cathode in a galvanic cell.

6. The tendency of a metal to become oxidized or reduced when placed in its salt solution is called:

(A) Activation energy
(B) Electrode potential
(C) Ionization energy
(D) Lattice energy

Correct Answer: B

Explanation: Electrode potential is the tendency of a metal to become oxidized or reduced.

7. During the electrolysis of concentrated aqueous NaCl, the product at the anode is:

(A) Hydrogen gas
(B) Oxygen gas
(C) Chlorine gas
(D) Sodium metal

Correct Answer: C

Explanation: During the electrolysis of concentrated aqueous NaCl, chlorine gas is produced at the anode.

8. Electroplating is used to:

(A) Dissolve a metal in a solution
(B) Produce electricity from a chemical reaction
(C) Separate two metals from an alloy
(D) Deposit one metal on another metal

Correct Answer: D

Explanation: Electroplating is used to deposit one metal on another metal.

9. In a Daniel cell, the anode is made of:

(A) Zinc
(B) Copper
(C) Silver
(D) Platinum

Correct Answer: A

Explanation: In a Daniel cell, the anode is made of zinc.

10. A fuel cell is a special type of galvanic cell which is based upon the reaction between oxygen and:

(A) Nitrogen
(B) Hydrogen
(C) Chlorine
(D) Carbon

Correct Answer: B

Explanation: A fuel cell is based on the reaction between oxygen and hydrogen.

11. In the electrolysis of dilute aqueous NaCl, the product at the anode is:

(A) Chlorine gas
(B) Hydrogen gas
(C) Oxygen gas
(D) Sodium metal

Correct Answer: C

Explanation: In dilute aqueous NaCl, OH^- ions are discharged instead of Cl^- ions, producing oxygen gas at the anode.

12. During the electrolysis of dilute sulphuric acid using platinum electrodes, the product at the cathode is:

(A) Oxygen gas
(B) Sulphur dioxide
(C) Sulphur trioxide
(D) Hydrogen gas

Correct Answer: D

Explanation: In the electrolysis of dilute sulphuric acid, hydrogen gas is produced at the cathode.

13. In a voltaic cell, the salt bridge serves the function of:

(A) Maintaining electrical neutrality by allowing ion movement
(B) Preventing electrons from flowing in the external circuit
(C) Storing excess energy from the cell

(D) Generating additional voltage for the cell

Correct Answer: A

Explanation: In a voltaic cell, the salt bridge serves the function of Maintaining electrical neutrality by allowing ion movement.

14. If the voltage data shows metal A has a higher standard reduction potential than metal B, it can be concluded that:

(A) Metal A is more reactive than metal B
(B) Metal B is more reactive than metal A
(C) Metal A and metal B have the same reactivity
(D) Metal A is less likely to gain electrons than metal B

Correct Answer: B

Explanation: Metal A has a higher reduction potential, so it is less reactive than metal B.

15. In the electrolysis of copper(II) sulphate using platinum electrodes, the product at the anode is:

(A) Copper metal
(B) Hydrogen gas
(C) Oxygen gas
(D) Sulphur dioxide

Correct Answer: C

Explanation: In the electrolysis of CuSO□ using platinum electrodes, oxygen gas is produced at the anode.

16. In the electrolysis of copper(II) sulphate using copper electrodes, the reaction at the anode is:

(A) $Cu^{2}□ + 2e□ \rightarrow Cu$
(B) $2H□ + 2e□ \rightarrow H□$
(C) $4OH□ \rightarrow 2H□O + O□ + 4e□$
(D) $Cu \rightarrow Cu^{2}□ + 2e□$

Correct Answer: D

Explanation: In the electrolysis of copper(II) sulphate using copper electrodes, the reaction at the anode is $Cu \rightarrow Cu^{2}□ + 2e□$.

17. Which of the following is a disadvantage of using fuel cells?

(A) Hydrogen is highly inflammable and explosive
(B) They are highly efficient
(C) They produce no harmful pollutants
(D) They have no moving parts

Correct Answer: A

Explanation: Hydrogen is highly inflammable and explosive, which is a disadvantage of fuel cells.

18. Electroplating of steel with zinc is done to:

(A) Make it more shiny
(B) Protect it from corrosion
(C) Make it softer
(D) Increase its density

Correct Answer: B

Explanation: Zinc plating on steel is done to protect it from corrosion.

19. In the electrolysis of concentrated aqueous NaCl, sodium ions are not reduced to sodium metal because:

(A) Sodium is less reactive than hydrogen
(B) Sodium ions are not attracted to the cathode
(C) Sodium is more reactive than hydrogen
(D) Sodium ions are too large to be reduced

Correct Answer: C

Explanation: Sodium is more reactive than hydrogen, so hydrogen ions are reduced instead of sodium ions.

20. The reducing agent in a hydrogen-oxygen fuel cell is:

(A) Oxygen
(B) Water
(C) KOH
(D) Hydrogen

Correct Answer: D

Explanation: Hydrogen is the reducing agent in a hydrogen-oxygen fuel cell.

21. In the electrolysis of copper(II) sulphate using copper electrodes, the concentration of the solution:

(A) Remains constant
(B) Increases
(C) Decreases
(D) Becomes zero

Correct Answer: A

Explanation: In the electrolysis of copper(II) sulphate using copper electrodes, the concentration of the solution Remains constant.

22. Which of the following is NOT an advantage of hydrogen-oxygen fuel cells?

(A) They are highly efficient
(B) Hydrogen is highly inflammable and explosive
(C) They produce no harmful pollutants
(D) They have no moving parts

Correct Answer: B

Explanation: Hydrogen being highly inflammable and explosive is a disadvantage of fuel cells, not an advantage.

23. In the electrolysis of molten lead(II) chloride, the product at the cathode is:

(A) Chlorine gas
(B) Hydrogen gas
(C) Lead metal
(D) Oxygen gas

Correct Answer: C

Explanation: In the electrolysis of molten PbCl□, lead metal is produced at the cathode.

24. The standard hydrogen electrode is used to:

(A) Generate electricity
(B) Store hydrogen gas
(C) Produce chlorine gas
(D) Measure electrode potentials

Correct Answer: D

Explanation: The standard hydrogen electrode is used to measure electrode potentials.

25. In the electrolysis of concentrated aqueous NaCl, the solution becomes:

(A) Sodium hydroxide
(B) Sodium chloride
(C) Hydrochloric acid
(D) Sulphuric acid

Correct Answer: A

Explanation: In the electrolysis of concentrated aqueous NaCl, the solution becomes Sodium hydroxide.

B. Less Important / Secondary Topics

26. Electroplating of chromium on steel requires pre-plating with:

(A) Copper or nickel
(B) Zinc or tin
(C) Silver or gold

(D) Lead or mercury

Correct Answer: A

Explanation: Chromium plating on steel requires pre-plating with copper or nickel.

27. In a hydrogen-oxygen fuel cell, the product at the anode is:

(A) Oxygen gas
(B) Water
(C) Hydrogen gas
(D) Hydroxide ions

Correct Answer: B

Explanation: In a hydrogen-oxygen fuel cell, water is produced at the anode.

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. Which of the following statements about a fuel cell is INCORRECT?

(A) It is a special type of galvanic cell
(B) It produces water as the only chemical product
(C) It has no moving parts
(D) It produces harmful pollutants

Correct Answer: D

Explanation: It produces harmful pollutants — this correctly answers the question.

30. In a galvanic cell, the electrode with the lower reduction potential acts as the:

(A) Anode
(B) Cathode
(C) Salt bridge
(D) Voltmeter

Correct Answer: A

Explanation: In a galvanic cell, the electrode with the lower reduction potential acts as the anode.

31. During the electrolysis of copper(II) sulphate using copper electrodes, the concentration of the solution:

(A) Increases
(B) Remains constant
(C) Decreases
(D) Becomes zero

Correct Answer: B

Explanation: During the electrolysis of copper(II) sulphate using copper electrodes, the concentration of the solution Remains constant.

32. Which of the following is NOT an advantage of hydrogen-oxygen fuel cells?

(A) They are highly efficient
(B) They produce no harmful pollutants
(C) Hydrogen is highly inflammable and explosive
(D) They have no moving parts

Correct Answer: C

Explanation: Hydrogen being highly inflammable and explosive is a disadvantage of fuel cells, not an advantage.

33. In the electrolysis of molten lead(II) chloride, the product at the cathode is:

(A) Chlorine gas
(B) Hydrogen gas
(C) Oxygen gas
(D) Lead metal

Correct Answer: D

Explanation: In the electrolysis of molten PbCl□, lead metal is produced at the cathode.

34. The standard hydrogen electrode is used to:

(A) Measure electrode potentials
(B) Generate electricity
(C) Store hydrogen gas
(D) Produce chlorine gas

Correct Answer: A

Explanation: The standard hydrogen electrode is used to measure electrode potentials.

35. In the electrolysis of concentrated aqueous NaCl, the solution becomes:

(A) Sodium chloride
(B) Sodium hydroxide
(C) Hydrochloric acid
(D) Sulphuric acid

Correct Answer: B

Explanation: In the electrolysis of concentrated aqueous NaCl, the solution becomes Sodium hydroxide.

36. 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.

37. Which of the following statements about a fuel cell is INCORRECT?

(A) It is a special type of galvanic cell
(B) It produces water as the only chemical product
(C) It has no moving parts
(D) It produces harmful pollutants

Correct Answer: D

Explanation: It produces harmful pollutants — this correctly answers the question.

38. In a galvanic cell, the electrode with the lower reduction potential acts as the:

(A) Anode
(B) Cathode
(C) Salt bridge
(D) Voltmeter

Correct Answer: A

Explanation: In a galvanic cell, the electrode with the lower reduction potential acts as the anode.

39. In the electrolysis of copper(II) sulphate using copper electrodes, the reaction at the anode is:

(A) $Cu^{2}\square + 2e\square \rightarrow Cu$
(B) $Cu \rightarrow Cu^{2}\square + 2e\square$
(C) $2H\square + 2e\square \rightarrow H\square$
(D) $4OH\square \rightarrow 2H\square O + O\square + 4e\square$

Correct Answer: B

Explanation: In the electrolysis of copper(II) sulphate using copper electrodes, the reaction at the anode is Cu → Cu²□ + 2e□.

40. In a hydrogen-oxygen fuel cell, the product at the anode is:

(A) Oxygen gas
(B) Hydrogen gas
(C) Water
(D) Hydroxide ions

Correct Answer: C

Explanation: In a hydrogen-oxygen fuel cell, water is produced at the anode.

41. In the electrolysis of dilute aqueous NaCl, the product at the anode is:

(A) Chlorine gas
(B) Hydrogen gas
(C) Sodium metal
(D) Oxygen gas

Correct Answer: D

Explanation: In dilute aqueous NaCl, OH□ ions are discharged instead of Cl□ ions, producing oxygen gas at the anode.

42. During the electrolysis of dilute sulphuric acid using platinum electrodes, the product at the cathode is:

(A) Hydrogen gas
(B) Oxygen gas
(C) Sulphur dioxide
(D) Sulphur trioxide

Correct Answer: A

Explanation: In the electrolysis of dilute sulphuric acid, hydrogen gas is produced at the cathode.

43. In a voltaic cell, the salt bridge serves the function of:

(A) Preventing electrons from flowing in the external circuit
(B) Maintaining electrical neutrality by allowing ion movement
(C) Storing excess energy from the cell
(D) Generating additional voltage for the cell

Correct Answer: B

Explanation: In a voltaic cell, the salt bridge serves the function of Maintaining electrical neutrality by allowing ion movement.

44. If the voltage data shows metal A has a higher standard reduction potential than metal B, it can be concluded that:

(A) Metal A is more reactive than metal B
(B) Metal A and metal B have the same reactivity
(C) Metal B is more reactive than metal A
(D) Metal A is less likely to gain electrons than metal B

Correct Answer: C

Explanation: Metal A has a higher reduction potential, so it is less reactive than metal B.

45. In the electrolysis of copper(II) sulphate using platinum electrodes, the product at the anode is:

(A) Copper metal
(B) Hydrogen gas
(C) Sulphur dioxide
(D) Oxygen gas

Correct Answer: D

Explanation: In the electrolysis of CuSO□ using platinum electrodes, oxygen gas is produced at the anode.

46. Which of the following is NOT an advantage of hydrogen-oxygen fuel cells?

(A) Hydrogen is highly inflammable and explosive
(B) They are highly efficient
(C) They produce no harmful pollutants
(D) They have no moving parts

Correct Answer: A

Explanation: Hydrogen being highly inflammable and explosive is a disadvantage of fuel cells, not an advantage.

47. In the electrolysis of molten lead(II) chloride, the product at the cathode is:

(A) Chlorine gas
(B) Lead metal
(C) Hydrogen gas
(D) Oxygen gas

Correct Answer: B

Explanation: In the electrolysis of molten PbCl□, lead metal is produced at the cathode.

48. The standard hydrogen electrode is used to:

(A) Generate electricity
(B) Store hydrogen gas
(C) Measure electrode potentials
(D) Produce chlorine gas

Correct Answer: C

Explanation: The standard hydrogen electrode is used to measure electrode potentials.

49. In the electrolysis of concentrated aqueous NaCl, the solution becomes:

(A) Sodium chloride
(B) Hydrochloric acid
(C) Sulphuric acid
(D) Sodium hydroxide

Correct Answer: D

Explanation: In the electrolysis of concentrated aqueous NaCl, the solution becomes Sodium hydroxide.

50. Electroplating of chromium on steel requires pre-plating with:

(A) Copper or nickel
(B) Zinc or tin
(C) Silver or gold
(D) Lead or mercury

Correct Answer: A

Explanation: Chromium plating on steel requires pre-plating with copper or nickel.

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Chemistry Grade 10 — Chapter 5

Reaction Kinetics

by Public Library

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

A. Important / Main Topics

1. The study of the rate of chemical reactions, their mechanisms, and the factors that influence them is called:

(A) Chemical kinetics
(B) Stoichiometry
(C) Electrochemistry
(D) Thermodynamics

Correct Answer: A

Explanation: Chemical kinetics is the study of the rate of chemical reactions, their mechanisms, and the factors that influence them.

2. The rate of a chemical reaction is the change in the concentration of a reactant or product in a given:

(A) Volume
(B) Time
(C) Temperature
(D) Pressure

Correct Answer: B

Explanation: The rate of a chemical reaction is the change in the concentration of a reactant or product in a given Time.

3. What is the unit for the rate of reaction?

(A) mol dm□³
(B) dm³ s□¹
(C) mol dm□³ s□¹
(D) mol s□¹

Correct Answer: C

Explanation: The unit for rate of reaction is mol dm□³ s□¹.

4. For a reaction to occur according to collision theory, the colliding particles must have:

(A) Low energy and random orientation
(B) Only enough energy
(C) Only correct orientation
(D) Enough energy and correct orientation

Correct Answer: D

Explanation: For a reaction to occur, the colliding particles must have enough energy and correct orientation.

5. The minimum amount of kinetic energy that the interacting particles must have is known as:

(A) Activation energy
(B) Potential energy
(C) Internal energy
(D) Kinetic energy

Correct Answer: A

Explanation: The minimum kinetic energy needed for a reaction is called activation energy.

6. A substance that accelerates a chemical reaction but does not change its chemical structure at the end is called a:

(A) Reactant

(B) Catalyst
(C) Product
(D) Solvent

Correct Answer: B

Explanation: A substance that accelerates a chemical reaction but does not change its chemical structure at the end is called a Catalyst.

7. Which of the following factors affects the rate of a reaction by changing the number of successful collisions?

(A) Colour of the reactant
(B) Smell of the product
(C) Concentration of reactants
(D) Density of the container

Correct Answer: C

Explanation: Concentration of reactants — this correctly answers the question.

8. Reactions with high activation energy are usually:

(A) Fast
(B) Exothermic
(C) Reversible
(D) Slow

Correct Answer: D

Explanation: Reactions with high activation energy are usually slow.

9. In a reversible reaction, a catalyst lowers the activation energy of the:

(A) Forward as well as reverse reaction
(B) Forward reaction only
(C) Reverse reaction only
(D) Neither reaction

Correct Answer: A

Explanation: In a reversible reaction, a catalyst lowers the activation energy of the Forward as well as reverse reaction.

10. Enzymes are catalysts in living organisms. They are:

(A) Carbohydrates
(B) Proteins
(C) Lipids
(D) Nucleic acids

Correct Answer: B

Explanation: Enzymes are catalysts in living organisms. They are Proteins.

11. The rate of a reaction generally _____ as the reaction proceeds.

(A) Increases
(B) Remains the same
(C) Decreases
(D) Becomes zero immediately

Correct Answer: C

Explanation: The rate of a reaction generally decreases as the reaction proceeds because the concentration of reactants decreases.

12. The activation energy for a reaction can be:

(A) Increased by increasing temperature
(B) Increased by decreasing temperature
(C) Decreased by increasing concentration of reactants
(D) Decreased by using a catalyst

Correct Answer: D

Explanation: The activation energy for a reaction can be decreased by using a catalyst.

13. When the temperature of a reaction increases, the particles:

(A) Move faster and collide more often
(B) Move slower and collide less often
(C) Stop moving
(D) Change colour

Correct Answer: A

Explanation: When the temperature of a reaction increases, the particles Move faster and collide more often.

14. Which of the following is NOT a factor that affects the rate of a reaction?

(A) Concentration of reactants
(B) Colour of the product
(C) Surface area
(D) Temperature

Correct Answer: B

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

15. A graph called the Maxwell-Boltzmann curve shows:

(A) The colour of a gas
(B) The density of a solid
(C) The distribution of energy among particles
(D) The smell of a reaction

Correct Answer: C

Explanation: The Maxwell-Boltzmann curve shows the distribution of energy among particles.

16. Powdered zinc reacts with dilute HCl faster than a solid chunk of zinc because:

(A) The powder has a lower activation energy
(B) The powder has a higher concentration
(C) The powder has a higher temperature
(D) The powder has more surface area exposed

Correct Answer: D

Explanation: Powdered zinc reacts faster because it has more surface area exposed.

17. When the temperature increases, the Maxwell-Boltzmann curve:

(A) Shifts to higher energies
(B) Shifts to lower energies
(C) Remains the same
(D) Disappears

Correct Answer: A

Explanation: When the temperature increases, the Maxwell-Boltzmann curve Shifts to higher energies.

18. In a pressure cooker, food cooks faster because:

(A) The pressure decreases the boiling point of water
(B) The pressure increases the boiling point of water
(C) The pressure increases the activation energy
(D) The pressure decreases the surface area

Correct Answer: B

Explanation: In a pressure cooker, food cooks faster because The pressure increases the boiling point of water.

19. Which of the following statements about a catalyst is correct?

(A) A catalyst is consumed in the reaction
(B) A catalyst changes the outcome of the reaction
(C) A catalyst lowers the activation energy
(D) A catalyst increases the activation energy

Correct Answer: C

Explanation: A catalyst lowers the activation energy — this correctly answers the question.

20. Why is it important for a catalyst to remain unchanged at the end of a reaction?

(A) So it can change the outcome
(B) So it can increase the activation energy
(C) So it can stop the reaction
(D) So it can be reused

Correct Answer: D

Explanation: A catalyst is not consumed and can be recovered and reused.

21. Which of the following is a biological catalyst?

(A) Enzyme
(B) Iron
(C) Platinum
(D) Vanadium pentaoxide

Correct Answer: A

Explanation: Enzyme — this correctly answers the question.

22. The rate of reaction between two specific time intervals is called the:

(A) Instantaneous rate
(B) Average rate
(C) Initial rate
(D) Final rate

Correct Answer: B

Explanation: The rate of reaction between two specific time intervals is called the average rate of reaction.

23. Which of the following statements about the rate of reaction is correct?

(A) The rate of reaction is constant throughout the reaction
(B) The rate of reaction is slowest at the beginning and speeds up over time
(C) The rate of reaction is fastest at the beginning and slows down over time
(D) The rate of reaction does not change with time

Correct Answer: C

Explanation: The rate of reaction is fastest at the beginning and slows down over time.

24. In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by:

(A) Stoichiometry
(B) Electrochemistry
(C) Thermodynamics
(D) Collision theory

Correct Answer: D

Explanation: In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by Collision theory.

25. A catalyst provides an easier pathway for a reaction by:

(A) Decreasing the activation energy
(B) Increasing the activation energy
(C) Increasing the temperature
(D) Decreasing the concentration

Correct Answer: A

Explanation: A catalyst provides an easier pathway for a reaction by Decreasing the activation energy.

B. Less Important / Secondary Topics

26. In a Maxwell-Boltzmann curve, the area under the curve represents:

(A) The total number of particles
(B) The activation energy
(C) The reaction rate
(D) The temperature

Correct Answer: A

Explanation: In a Maxwell-Boltzmann curve, the area under the curve represents The total number of particles.

27. Which of the following is an example of a reaction that is fast at room temperature?

(A) Fermentation of glucose
(B) Acid-base neutralization
(C) Digestion of food
(D) Rusting of iron

Correct Answer: B

Explanation: Acid-base neutralization is a fast reaction, taking only a few microseconds.

28. In the Haber process, a catalyst is used to:

(A) Increase the yield of ammonia
(B) Decrease the yield of ammonia
(C) Speed up the reaction
(D) Change the equilibrium position

Correct Answer: C

Explanation: A catalyst is used to speed up the reaction, not to change the yield or equilibrium position.

29. A catalyst does NOT:

(A) Lower the activation energy
(B) Speed up the reaction
(C) Provide an easier pathway
(D) Get consumed in the reaction

Correct Answer: D

Explanation: A catalyst is not consumed in the reaction.

30. In a reaction between H□ and Cl□ to form HCl, the activated complex is:

(A) A temporary, high-energy state
(B) The final product
(C) A stable intermediate
(D) The reactant

Correct Answer: A

Explanation: The activated complex is a temporary, high-energy state.

31. The rate of a reaction can be increased by:

(A) Decreasing the temperature
(B) Increasing the surface area of a solid reactant
(C) Decreasing the concentration of reactants
(D) Adding a catalyst that increases activation energy

Correct Answer: B

Explanation: The rate of a reaction can be increased by Increasing the surface area of a solid reactant.

32. Which of the following is NOT a characteristic of enzymes?

(A) They are proteins
(B) They are highly specific
(C) They are consumed in the reaction
(D) They speed up reactions in living organisms

Correct Answer: C

Explanation: Enzymes are not consumed in the reaction.

33. Which of the following factors affects the rate of a reaction by changing the number of successful collisions?

(A) Colour of the reactant
(B) Smell of the product
(C) Density of the container
(D) Concentration of reactants

Correct Answer: D

Explanation: Concentration of reactants — this correctly answers the question.

34. A substance that accelerates a chemical reaction but does not change its chemical structure at the end is called a:

(A) Catalyst
(B) Reactant
(C) Product
(D) Solvent

Correct Answer: A

Explanation: A substance that accelerates a chemical reaction but does not change its chemical structure at the end is called a Catalyst.

35. The minimum amount of kinetic energy that the interacting particles must have is known as:

(A) Potential energy
(B) Activation energy
(C) Internal energy
(D) Kinetic energy

Correct Answer: B

Explanation: The minimum kinetic energy needed for a reaction is called activation energy.

36. Which of the following statements about the rate of reaction is correct?

(A) The rate of reaction is constant throughout the reaction
(B) The rate of reaction is slowest at the beginning and speeds up over time
(C) The rate of reaction is fastest at the beginning and slows down over time
(D) The rate of reaction does not change with time

Correct Answer: C

Explanation: The rate of reaction is fastest at the beginning and slows down over time.

37. In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by:

(A) Stoichiometry
(B) Electrochemistry
(C) Thermodynamics
(D) Collision theory

Correct Answer: D

Explanation: In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by Collision theory.

38. A catalyst provides an easier pathway for a reaction by:

(A) Decreasing the activation energy
(B) Increasing the activation energy
(C) Increasing the temperature
(D) Decreasing the concentration

Correct Answer: A

Explanation: A catalyst provides an easier pathway for a reaction by Decreasing the activation energy.

39. In a Maxwell-Boltzmann curve, the area under the curve represents:

(A) The activation energy

(B) The total number of particles
(C) The reaction rate
(D) The temperature

Correct Answer: B

Explanation: In a Maxwell-Boltzmann curve, the area under the curve represents The total number of particles.

40. Which of the following is an example of a reaction that is fast at room temperature?

(A) Fermentation of glucose
(B) Digestion of food
(C) Acid-base neutralization
(D) Rusting of iron

Correct Answer: C

Explanation: Acid-base neutralization is a fast reaction, taking only a few microseconds.

41. In the Haber process, a catalyst is used to:

(A) Increase the yield of ammonia
(B) Decrease the yield of ammonia
(C) Change the equilibrium position
(D) Speed up the reaction

Correct Answer: D

Explanation: A catalyst is used to speed up the reaction, not to change the yield or equilibrium position.

42. A catalyst does NOT:

(A) Get consumed in the reaction
(B) Lower the activation energy
(C) Speed up the reaction
(D) Provide an easier pathway

Correct Answer: A

Explanation: A catalyst is not consumed in the reaction.

43. In a reaction between H□ and Cl□ to form HCl, the activated complex is:

(A) The final product
(B) A temporary, high-energy state
(C) A stable intermediate
(D) The reactant

Correct Answer: B

Explanation: The activated complex is a temporary, high-energy state.

44. The rate of a reaction can be increased by:

(A) Decreasing the temperature
(B) Decreasing the concentration of reactants
(C) Increasing the surface area of a solid reactant
(D) Adding a catalyst that increases activation energy

Correct Answer: C

Explanation: The rate of a reaction can be increased by Increasing the surface area of a solid reactant.

45. Which of the following is NOT a characteristic of enzymes?

(A) They are proteins
(B) They are highly specific
(C) They speed up reactions in living organisms
(D) They are consumed in the reaction

Correct Answer: D

Explanation: Enzymes are not consumed in the reaction.

46. Why is it important for a catalyst to remain unchanged at the end of a reaction?

(A) So it can be reused

(B) So it can change the outcome
(C) So it can increase the activation energy
(D) So it can stop the reaction

Correct Answer: A

Explanation: A catalyst is not consumed and can be recovered and reused.

47. Which of the following is a biological catalyst?

(A) Iron
(B) Enzyme
(C) Platinum
(D) Vanadium pentaoxide

Correct Answer: B

Explanation: Enzyme — this correctly answers the question.

48. The rate of reaction between two specific time intervals is called the:

(A) Instantaneous rate
(B) Initial rate
(C) Average rate
(D) Final rate

Correct Answer: C

Explanation: The rate of reaction between two specific time intervals is called the average rate of reaction.

49. Which of the following statements about the rate of reaction is correct?

(A) The rate of reaction is constant throughout the reaction
(B) The rate of reaction is slowest at the beginning and speeds up over time
(C) The rate of reaction does not change with time
(D) The rate of reaction is fastest at the beginning and slows down over time

Correct Answer: D

Explanation: The rate of reaction is fastest at the beginning and slows down over time.

50. In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by:

(A) Collision theory
(B) Stoichiometry
(C) Electrochemistry
(D) Thermodynamics

Correct Answer: A

Explanation: In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by Collision theory.

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Chemistry Grade 10 — Chapter 6

Salts

by Public Library

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

A. Important / Main Topics

1. Salts are ionic compounds formed through the electrostatic attraction between:

(A) Oppositely charged ions
(B) Two positively charged ions
(C) Two negatively charged ions
(D) Neutral molecules

Correct Answer: A

Explanation: Salts are ionic compounds formed through the electrostatic attraction between oppositely charged ions.

2. In a typical salt formation reaction, the positive ions come from:

(A) Acids
(B) Bases
(C) Water
(D) Air

Correct Answer: B

Explanation: In a typical salt formation reaction, the positive ions come from bases.

3. In a typical salt formation reaction, the negative ions come from:

(A) Bases
(B) Water
(C) Acids
(D) Air

Correct Answer: C

Explanation: In a typical salt formation reaction, the negative ions come from acids.

4. At STP, salts are usually:

(A) Gases
(B) Liquids
(C) Plasmas
(D) Solids

Correct Answer: D

Explanation: At STP, salts are usually Solids.

5. Why do salts have high melting points?

(A) Strong electrostatic forces
(B) Weak van der Waals forces
(C) Hydrogen bonding
(D) Covalent bonding

Correct Answer: A

Explanation: Strong electrostatic forces — this correctly answers the question.

6. In what state are salts generally good conductors of electricity?

(A) Solid
(B) Molten
(C) Gas
(D) Powdered

Correct Answer: B

Explanation: Salts are good conductors of electricity in the molten state.

7. Which of the following is a general solubility rule for chlorides?

(A) All chlorides are insoluble
(B) All chlorides are soluble
(C) Chlorides are soluble except lead and silver chlorides
(D) Chlorides are soluble except sodium and potassium chlorides

Correct Answer: C

Explanation: Chlorides are soluble except lead and silver chlorides.

8. What happens to the ions in a salt when it is dissolved in water?

(A) They form a gas
(B) They become fixed in place
(C) They form a solid
(D) They become mobile

Correct Answer: D

Explanation: When a salt is dissolved in water, its ions become mobile.

9. Which method is used to prepare a salt by titration?

(A) Acid + Alkali
(B) Acid + Metal
(C) Acid + Insoluble Base
(D) Acid + Insoluble Carbonate

Correct Answer: A

Explanation: Titration is used to prepare a salt from an acid and an alkali.

10. Which of these salts is insoluble in water?

(A) Potassium carbonate (K□CO□)
(B) Lead chloride (PbCl□)
(C) Ammonium nitrate (NH□NO□)
(D) Calcium chloride (CaCl□)

Correct Answer: B

Explanation: Lead chloride (PbCl□) is insoluble in water.

11. What is formed when an acid reacts with an excess of an insoluble base?

(A) Salt and hydrogen
(B) Salt and carbon dioxide
(C) Salt and water
(D) Salt and oxygen

Correct Answer: C

Explanation: When an acid reacts with an excess of an insoluble base, a salt and water are formed.

12. Which of the following salts is soluble in water?

(A) Silver chloride (AgCl)
(B) Lead carbonate (PbCO□)
(C) Lead chloride (PbCl□)
(D) Sodium nitrate (NaNO□)

Correct Answer: D

Explanation: Sodium nitrate (NaNO□) is soluble in water.

13. What type of ions do bases provide for salt formation?

(A) Positive ions
(B) Negative ions
(C) Neutral molecules
(D) Complex ions

Correct Answer: A

Explanation: Bases provide positive ions (cations) for salt formation.

14. In the preparation of a soluble salt using an excess of insoluble base, the excess base is removed by:

(A) Evaporation
(B) Filtration
(C) Crystallization
(D) Distillation

Correct Answer: B

Explanation: The excess base is removed by filtration.

15. The general solubility rule states that all _____ salts are soluble in water.

(A) Carbonate
(B) Hydroxide
(C) Nitrate
(D) Sulphate

Correct Answer: C

Explanation: All nitrate salts are soluble in water.

16. Which method is used to prepare a soluble salt when the base is insoluble?

(A) Titration
(B) Excess metal
(C) Excess insoluble carbonate
(D) Excess insoluble base

Correct Answer: D

Explanation: Excess insoluble base is used when the base is insoluble.

17. In the preparation of a soluble salt using excess metal, the metal is added in excess to:

(A) Ensure all the acid is used up
(B) Speed up the reaction
(C) Increase the yield
(D) Change the product

Correct Answer: A

Explanation: The metal is added in excess to ensure all the acid is used up.

18. Which of the following is an example of a salt that is soluble in water?

(A) Silver chloride (AgCl)
(B) Sodium chloride (NaCl)
(C) Lead sulphate (PbSO□)
(D) Calcium carbonate (CaCO□)

Correct Answer: B

Explanation: Sodium chloride (NaCl) is soluble in water.

19. During crystallization, the solution is:

(A) Heated to boiling
(B) Filtered immediately
(C) Cooled to form crystals
(D) Mixed with more solvent

Correct Answer: C

Explanation: During crystallization, the solution is cooled to form crystals.

20. Which of the following methods is used to prepare copper(II) sulphate from sulphuric acid and copper(II) oxide?

(A) Titration
(B) Excess metal
(C) Excess insoluble carbonate

(D) Excess insoluble base

Correct Answer: D

Explanation: Copper(II) oxide is an insoluble base, so the excess insoluble base method is used.

21. Do you think that most carbonates are soluble in water?

(A) No, most carbonates are insoluble
(B) Yes, all carbonates are soluble
(C) Only sodium carbonate is soluble
(D) Only calcium carbonate is soluble

Correct Answer: A

Explanation: Most carbonates are insoluble in water; the exceptions are sodium, potassium, and ammonium carbonates.

22. How can you prepare a soluble salt using an excess of an insoluble base?

(A) Add the base in exact amounts, filter, evaporate
(B) Add the base in excess, filter, evaporate, crystallize
(C) Add the base in excess, distill, crystallize
(D) Add the base in exact amounts, distill

Correct Answer: B

Explanation: Add the base in excess, filter, evaporate, crystallize — this correctly answers the question.

23. Which salts are typically soluble according to the general solubility rules?

(A) All carbonates
(B) All hydroxides
(C) All sodium, potassium, and ammonium salts
(D) All sulphates

Correct Answer: C

Explanation: All sodium, potassium, and ammonium salts are soluble.

24. Explain the process of crystallization in the preparation of a soluble salt.

(A) The solution is heated to boiling to form crystals
(B) The solution is filtered to form crystals
(C) The solution is mixed with more solvent to form crystals
(D) The solution is cooled to form crystals

Correct Answer: D

Explanation: "The solution is cooled to form crystals" is correct: it matches the idea asked in the question ("Explain the process of crystallization in the preparation of a soluble salt"), while the other choices do not.

25. Which of the following is a general solubility rule for carbonates?

(A) Carbonates are insoluble except sodium, potassium, and ammonium carbonates
(B) All carbonates are soluble
(C) All carbonates are insoluble
(D) Carbonates are soluble except sodium, potassium, and ammonium carbonates

Correct Answer: A

Explanation: Most carbonates are insoluble except sodium, potassium, and ammonium carbonates.

B. Less Important / Secondary Topics

26. Which of the following is a general solubility rule for sulphates?

(A) Sulphates are soluble except lead, barium, and calcium sulphates
(B) All sulphates are insoluble
(C) All sulphates are soluble
(D) Sulphates are insoluble except lead, barium, and calcium sulphates

Correct Answer: A

Explanation: Most sulphates are soluble except lead(II) sulphate, barium sulphate, and calcium sulphate.

27. Which of the following is an example of an insoluble salt?

(A) Sodium chloride (NaCl)
(B) Barium sulphate (BaSO□)
(C) Potassium nitrate (KNO□)
(D) Ammonium chloride (NH□Cl)

Correct Answer: B

Explanation: Barium sulphate (BaSO□) is insoluble in water.

28. Which of the following is an example of a soluble salt?

(A) Silver chloride (AgCl)
(B) Lead sulphate (PbSO□)
(C) Potassium nitrate (KNO□)
(D) Calcium carbonate (CaCO□)

Correct Answer: C

Explanation: Potassium nitrate (KNO□) is soluble in water.

29. Which of the following statements about salts is correct?

(A) Salts are covalent compounds
(B) Salts are metallic compounds
(C) Salts are molecular compounds
(D) Salts are ionic compounds

Correct Answer: D

Explanation: Salts are ionic compounds — this correctly answers the question.

30. Which of the following is a property of ionic compounds?

(A) They form a crystal lattice
(B) They are gases at STP
(C) They have low melting points
(D) They conduct electricity in solid state

Correct Answer: A

Explanation: They form a crystal lattice — this correctly answers the question.

31. When a salt dissolves in water, it dissociates into:

(A) Atoms
(B) Ions
(C) Molecules
(D) Electrons

Correct Answer: B

Explanation: When a salt dissolves in water, it dissociates into Ions.

32. Which of the following salts is insoluble in water?

(A) Sodium nitrate
(B) Ammonium chloride
(C) Barium sulphate
(D) Potassium carbonate

Correct Answer: C

Explanation: Barium sulphate (BaSO□) is insoluble in water.

33. Which of the following is NOT a property of ionic compounds?

(A) They are solids at STP
(B) They have high melting points
(C) They form a crystal lattice
(D) They conduct electricity in solid state

Correct Answer: D

Explanation: Ionic compounds do not conduct electricity in solid state because their ions are not free to move.

34. Which of the following salts is soluble in water?

(A) Sodium nitrate (NaNO□)
(B) Silver chloride (AgCl)
(C) Lead carbonate (PbCO□)
(D) Lead chloride (PbCl□)

Correct Answer: A

Explanation: Sodium nitrate (NaNO□) is soluble in water.

35. What type of ions do acids provide for salt formation?

(A) Positive ions
(B) Negative ions
(C) Neutral molecules
(D) Complex ions

Correct Answer: B

Explanation: Acids provide negative ions (anions) for salt formation.

36. An impure sample of calcium carbonate has a mass of 70 g. After purification, 56 g of calcium carbonate is recovered. What is the percentage purity of calcium carbonate?

(A) 56%
(B) 70%
(C) 80%
(D) 90%

Correct Answer: C

Explanation: 80% — this correctly answers the question.

37. If the impure sample contains 14 g of impurities, what is the mass of the pure CaCO□?

(A) 14 g
(B) 70 g
(C) 80 g
(D) 56 g

Correct Answer: D

Explanation: 56 g — this correctly answers the question.

38. What method would you use to purify this sample?

(A) Crystallization or filtration
(B) Distillation
(C) Sublimation
(D) Evaporation

Correct Answer: A

Explanation: For CaCO□, since it is insoluble, filtration can be used to separate it from soluble impurities. Crystallization can also be used.

39. If the purified CaCO□ is reacted with excess HCl, what gas is produced?

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

Correct Answer: B

Explanation: Carbon dioxide (CO□) gas is produced when CaCO□ reacts with HCl.

40. Write the balanced chemical equation for the reaction between CaCO□ and HCl.

(A) CaCO□ + HCl → CaCl□ + H□
(B) CaCO□ + HCl → CaCl□ + O□
(C) CaCO□ + 2HCl → CaCl□ + CO□ + H□O
(D) CaCO□ + 2HCl → CaCl□ + H□ + CO□

Correct Answer: C

Explanation: "CaCO□ + 2HCl → CaCl□ + CO□ + H□O" is correct: it matches the idea asked in the question ("Write the balanced chemical equation for the reaction between CaCO□ and HCl"), while the other choices do not.

41. In the preparation of a soluble salt by titration, the indicator used is:

(A) Litmus
(B) Methyl orange
(C) Universal indicator
(D) Phenolphthalein

Correct Answer: D

Explanation: Phenolphthalein is used as an indicator in the titration method of salt preparation.

42. Why is phenolphthalein used in the titration method of salt preparation?

(A) It changes colour at the end point
(B) It speeds up the reaction
(C) It increases the yield
(D) It prevents the reaction

Correct Answer: A

Explanation: Phenolphthalein changes colour at the end point, indicating when neutralization is complete.

43. In a titration, 25.0 cm³ of a 0.10 mol/dm³ NaOH solution neutralized 20.0 cm³ of an HCl solution. What is the concentration of the HCl solution in mol/dm³?

(A) 0.08 M
(B) 0.125 M
(C) 0.10 M
(D) 0.20 M

Correct Answer: B

Explanation: 0.125 M — this correctly answers the question.

44. In a titration, 25.0 cm³ of a 0.10 mol/dm³ NaOH solution neutralized 20.0 cm³ of an HCl solution. What is the concentration of the HCl solution in g/dm³? (Molar mass of HCl = 36.5 g/mol)

(A) 3.65 g/dm³
(B) 5.00 g/dm³
(C) 4.56 g/dm³
(D) 2.50 g/dm³

Correct Answer: C

Explanation: "4.56 g/dm³" is correct: it matches the idea asked in the question ("In a titration, 25.0 cm³ of a 0.10 mol/dm³ NaOH solution neutralized 20.0 cm³ of an HCl solution. What is the concentration of the HCl solution in g/dm³? (Molar mass of HCl = 36.5 g/mol)"), while the other choices do not.

45. If the HCl solution is diluted to 100 cm³, what is the new concentration?

(A) 0.05 M
(B) 0.10 M
(C) 0.125 M
(D) 0.025 M

Correct Answer: D

Explanation: 0.025 M — this correctly answers the question.

46. In the preparation of a soluble salt using excess metal, the metal is added in excess to:

(A) Ensure all the acid is used up
(B) Speed up the reaction
(C) Increase the yield
(D) Change the product

Correct Answer: A

Explanation: The metal is added in excess to ensure all the acid is used up.

47. Which of the following is NOT a property of ionic compounds?

(A) They are solids at STP
(B) They conduct electricity in solid state
(C) They have high melting points
(D) They form a crystal lattice

Correct Answer: B

Explanation: Ionic compounds do not conduct electricity in solid state because their ions are not free to move.

48. Which of the following salts is soluble in water?

(A) Silver chloride (AgCl)
(B) Lead carbonate (PbCO□)
(C) Sodium nitrate (NaNO□)
(D) Lead chloride (PbCl□)

Correct Answer: C

Explanation: Sodium nitrate (NaNO□) is soluble in water.

49. What type of ions do acids provide for salt formation?

(A) Positive ions
(B) Neutral molecules
(C) Complex ions
(D) Negative ions

Correct Answer: D

Explanation: Acids provide negative ions (anions) for salt formation.

50. Which method is used to prepare a salt by titration?

(A) Acid + Alkali
(B) Acid + Metal
(C) Acid + Insoluble Base
(D) Acid + Insoluble Carbonate

Correct Answer: A

Explanation: Titration is used to prepare a salt from an acid and an alkali.

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Chemistry Grade 10 — Chapter 7

Nitrogen, Sulphur and Metals

by Public Library

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

A. Important / Main Topics

1. What is a key component of photochemical smog formed by the reaction of NO and NO□ with unburned hydrocarbons?

(A) Peroxyacetyl nitrate (PAN)
(B) Sulfuric acid
(C) Carbon monoxide
(D) Ozone

Correct Answer: A

Explanation: Peroxyacetyl nitrate (PAN) is a key component of photochemical smog formed by the reaction of NO and NO□ with unburned hydrocarbons.

2. Which of the following is the balanced equation for the production of ammonia in the Haber process?

(A) N□□g□ + H□□g□ rightleftharpoons NH□□g□
(B) N□□g□ + 3H□□g□ rightleftharpoons 2NH□□g□
(C) N□□g□ + 2H□□g□ rightleftharpoons 2NH□□g□
(D) 2N□□g□ + 3H□□g□ rightleftharpoons 2NH□□g□

Correct Answer: B

Explanation: N□□g□ + 3H□□g□ rightleftharpoons 2NH□□g□ — this correctly answers the question.

3. What are the sources of hydrogen and nitrogen in the Haber process?

(A) Water and air
(B) Methane and water
(C) Methane and air
(D) Water and methane

Correct Answer: C

Explanation: Hydrogen is obtained from methane and nitrogen from air.

4. Which catalyst is used in the Haber process?

(A) Platinum
(B) Vanadium(V) oxide
(C) Nickel
(D) Iron

Correct Answer: D

Explanation: Iron is used as a catalyst in the Haber process.

5. At what temperature is the Haber process typically conducted?

(A) 450^circ C
(B) 300^circ C
(C) 600^circ C
(D) 200^circ C

Correct Answer: A

Explanation: The Haber process is typically conducted at 450^circ C.

6. What is the symbol equation for the conversion of sulphur dioxide to sulphur trioxide in the Contact process?

(A) SO□□g□ + O□□g□ rightleftharpoons SO□□g□
(B) 2SO□□g□ + O□□g□ rightleftharpoons 2SO□□g□

(C) SO□□g□ + 2O□□g□ rightleftharpoons 2SO□□g□
(D) 2SO□□g□ + O□□g□ rightleftharpoons SO□□g□

Correct Answer: B

Explanation: 2SO□□g□ + O□□g□ rightleftharpoons 2SO□□g□ — this correctly answers the question.

7. Which catalyst is used in the Contact process for the conversion of SO□ to SO□?

(A) Iron
(B) Platinum
(C) Vanadium(V) oxide
(D) Nickel

Correct Answer: C

Explanation: Vanadium(V) oxide is used as a catalyst in the Contact process.

8. What are the sources of sulphur dioxide in the Contact process?

(A) Burning methane
(B) Electrolysis of water
(C) Combustion of natural gas
(D) Burning sulphur or roasting sulphide ores

Correct Answer: D

Explanation: Sulphur dioxide is produced by burning sulphur or roasting sulphide ores.

9. How do atmospheric oxides react with acids and bases?

(A) Forming a salt and water
(B) Forming an acid and a gas
(C) Forming a base and hydrogen
(D) Forming a salt and hydrogen

Correct Answer: A

Explanation: Atmospheric oxides react with acids and bases to form a salt and water.

10. Which of the following oxides is amphoteric?

(A) SO□
(B) Al□O□
(C) CO□
(D) CuO

Correct Answer: B

Explanation: Al□O□ — this correctly answers the question.

11. Which of the following is an acidic oxide?

(A) Na□O
(B) CaO
(C) CO□
(D) Al□O□

Correct Answer: C

Explanation: CO□ is an acidic oxide; it reacts with water to form carbonic acid.

12. Which of the following is a basic oxide?

(A) SO□
(B) CO□
(C) Al□O□
(D) CuO

Correct Answer: D

Explanation: CuO is a basic oxide; it reacts with acids to form salts and water.

13. Amphoteric oxides can react with:

(A) Both acids and bases
(B) Only acids

(C) Only bases
(D) Neither acids nor bases

Correct Answer: A

Explanation: Amphoteric oxides can react with both acids and bases.

14. Which of the following is an example of an amphoteric oxide?

(A) SO□
(B) ZnO
(C) CO□
(D) Na□O

Correct Answer: B

Explanation: ZnO is an amphoteric oxide; it reacts with both acids and bases.

15. Metals react with dilute acids to form:

(A) Salt and water
(B) Salt and carbon dioxide
(C) Salt and hydrogen gas
(D) Salt and oxygen

Correct Answer: C

Explanation: Metals react with dilute acids to form a salt and hydrogen gas.

16. Which of the following metals does NOT react with dilute acids?

(A) Magnesium
(B) Zinc
(C) Iron
(D) Copper

Correct Answer: D

Explanation: Copper does not react with dilute acids.

17. Reactive metals react with cold water to form:

(A) Metal hydroxide and hydrogen gas
(B) Metal oxide and hydrogen gas
(C) Metal hydroxide and oxygen gas
(D) Metal oxide and oxygen gas

Correct Answer: A

Explanation: Reactive metals react with cold water to form a metal hydroxide and hydrogen gas.

18. Which of the following metals reacts vigorously with cold water?

(A) Zinc
(B) Sodium
(C) Iron
(D) Copper

Correct Answer: B

Explanation: Sodium reacts vigorously with cold water.

19. Metals react with steam to form:

(A) Metal hydroxide and hydrogen gas
(B) Metal oxide and oxygen gas
(C) Metal oxide and hydrogen gas
(D) Metal hydroxide and oxygen gas

Correct Answer: C

Explanation: Metals react with steam to form a metal oxide and hydrogen gas.

20. Which of the following metals is unreactive?

(A) Potassium
(B) Sodium

(C) Calcium
(D) Gold

Correct Answer: D

Explanation: Gold — this correctly answers the question.

21. In the Contact process, the conversion of SO□ to SO□ is favoured by:

(A) High pressure and low temperature
(B) Low pressure and high temperature
(C) High pressure and high temperature
(D) Low pressure and low temperature

Correct Answer: A

Explanation: In the Contact process, the conversion of SO□ to SO□ is favoured by High pressure and low temperature.

22. The temperature used in the Contact process is:

(A) 200^circ C
(B) 450^circ C
(C) 300^circ C
(D) 600^circ C

Correct Answer: B

Explanation: The temperature used in the Contact process is 450^circ C.

23. Which of the following is an example of an acidic oxide?

(A) Na□O
(B) CaO
(C) SO□
(D) MgO

Correct Answer: C

Explanation: SO□ — this correctly answers the question.

24. Which of the following is an example of a basic oxide?

(A) CO□
(B) SO□
(C) Al□O□
(D) CaO

Correct Answer: D

Explanation: CaO — this correctly answers the question.

25. Which of the following metals is highly reactive?

(A) Potassium
(B) Copper
(C) Silver
(D) Gold

Correct Answer: A

Explanation: Potassium — this correctly answers the question.

B. Less Important / Secondary Topics

26. Which of the following is NOT a source of sulphur dioxide?

(A) Burning methane
(B) Burning sulphur
(C) Roasting sulphide ores
(D) Combustion of natural gas

Correct Answer: A

Explanation: Burning methane is not a source of sulphur dioxide.

27. Which of the following metals reacts vigorously with cold water?

(A) Zinc
(B) Sodium
(C) Iron
(D) Copper

Correct Answer: B

Explanation: Sodium reacts vigorously with cold water.

28. Which of the following is NOT a property of alkenes?

(A) They are unsaturated hydrocarbons
(B) They decolourise bromine water
(C) They are saturated hydrocarbons
(D) They undergo addition reactions

Correct Answer: C

Explanation: Alkenes are unsaturated hydrocarbons, not saturated.

29. A new metal was discovered and found to react with steam but not cold water. Where would you place it in the reactivity series?

(A) Highly reactive
(B) Less reactive
(C) Unreactive
(D) Moderately reactive

Correct Answer: D

Explanation: The new metal would be placed in the moderately reactive group because it reacts with steam but not cold water.

30. Which of the following statements about the Haber process is correct?

(A) It is an exothermic reaction
(B) It is an endothermic reaction
(C) It is a neutral reaction
(D) It does not involve a catalyst

Correct Answer: A

Explanation: The Haber process is an exothermic reaction.

31. In the Haber process, what is the effect of increasing pressure on the yield of ammonia?

(A) Decreases the yield
(B) Increases the yield
(C) No effect
(D) Stops the reaction

Correct Answer: B

Explanation: Increases the yield — this correctly answers the question.

32. In the Haber process, what is the effect of increasing temperature on the yield of ammonia?

(A) Increases the yield
(B) No effect
(C) Decreases the yield
(D) Stops the reaction

Correct Answer: C

Explanation: Decreases the yield — this correctly answers the question.

33. In the Contact process, what is the effect of increasing pressure on the yield of SO□?

(A) Decreases the yield
(B) No effect
(C) Stops the reaction
(D) Increases the yield

Correct Answer: D

Explanation: Increases the yield — this correctly answers the question.

34. In the Contact process, what is the effect of increasing temperature on the yield of SO□?

(A) Decreases the yield
(B) Increases the yield
(C) No effect
(D) Stops the reaction

Correct Answer: A

Explanation: Decreases the yield — this correctly answers the question.

35. Which of the following is a source of nitrogen oxides in the atmosphere?

(A) Vehicle engines
(B) All of the above
(C) Industrial activities
(D) Combustion processes

Correct Answer: B

Explanation: Nitrogen oxides are produced from vehicle engines, industrial activities, and combustion processes.

36. Compare the roles of NO and NO□ in the formation of acid rain. How do their chemical behaviours contribute to both direct acid formation and the oxidation of sulphur dioxide?

(A) NO directly forms nitric acid; NO□ catalyses the oxidation of SO□
(B) NO directly forms nitric acid; NO catalyses the oxidation of SO□
(C) NO□ directly forms nitric acid; NO□ catalyses the oxidation of SO□
(D) NO□ directly forms sulphuric acid; NO□ catalyses the oxidation of SO□

Correct Answer: C

Explanation: NO□ reacts with water and oxygen to form nitric acid directly. NO□ also catalyses the oxidation of SO□ to SO□, which then forms sulphuric acid.

37. Analyse the classification of oxides. Why are oxides like SO□ considered acidic, while oxides like CuO are considered basic?

(A) SO□ is a metal oxide; CuO is a non-metal oxide
(B) SO□ is amphoteric; CuO is acidic
(C) SO□ is basic; CuO is acidic
(D) SO□ is a non-metal oxide; CuO is a metal oxide

Correct Answer: D

Explanation: SO□ is a non-metal oxide; CuO is a metal oxide — this correctly answers the question.

38. In the Contact process, sulphur dioxide is converted to sulphur trioxide: 2SO□□g□ + O□□g□ rightleftharpoons 2SO□□g□ + 45.2\ kcal How many moles of SO□ are needed to produce 6 moles of SO□?

(A) 6 moles
(B) 3 moles
(C) 12 moles
(D) 18 moles

Correct Answer: A

Explanation: 6 moles — this correctly answers the question.

39. In the Contact process, how many moles of O□ are needed to react with 6 moles of SO□?

(A) 1 mole
(B) 3 moles
(C) 2 moles
(D) 6 moles

Correct Answer: B

Explanation: 3 moles — this correctly answers the question.

40. If the actual yield of SO□ is 4 moles, what is the percentage yield?

(A) 75.00%
(B) 80.00%
(C) 66.67%
(D) 50.00%

Correct Answer: C

Explanation: 66.67% — this correctly answers the question.

41. In the Haber process, nitrogen and hydrogen react to form ammonia: N□□g□ + 3H□□g□ rightleftharpoons 2NH□□g□ How many moles of H□ are needed to react with 4 moles of N□?

(A) 4 moles
(B) 8 moles
(C) 16 moles
(D) 12 moles

Correct Answer: D

Explanation: 12 moles — this correctly answers the question.

42. How many moles of NH□ are produced from 4 moles of N□?

(A) 8 moles
(B) 4 moles
(C) 6 moles
(D) 10 moles

Correct Answer: A

Explanation: 8 moles — this correctly answers the question.

43. If the actual yield of NH□ is 6 moles, what is the percentage yield?

(A) 60%
(B) 75%
(C) 80%
(D) 90%

Correct Answer: B

Explanation: 75% — this correctly answers the question.

44. Which of the following statements about the reactivity series is correct?

(A) Potassium is less reactive than copper
(B) Zinc is more reactive than magnesium
(C) Sodium is more reactive than calcium
(D) Gold is more reactive than silver

Correct Answer: C

Explanation: Sodium is more reactive than calcium — this correctly answers the question.

45. Which of the following metals reacts with steam but not cold water?

(A) Potassium
(B) Sodium
(C) Gold
(D) Magnesium

Correct Answer: D

Explanation: Magnesium reacts with steam but not significantly with cold water.

46. Which of the following metals does not react with cold water, steam, or dilute acids?

(A) Gold
(B) Zinc
(C) Iron
(D) Copper

Correct Answer: A

Explanation: Gold is an unreactive metal and does not react with cold water, steam, or dilute acids.

47. Which of the following statements about the Contact process is correct?

(A) The reaction is endothermic
(B) The reaction is exothermic
(C) The reaction is neutral
(D) The reaction does not involve a catalyst

Correct Answer: B

Explanation: The Contact process is an exothermic reaction.

48. What is the effect of increasing pressure on the yield of SO□ in the Contact process?

(A) Decreases the yield
(B) No effect
(C) Increases the yield
(D) Stops the reaction

Correct Answer: C

Explanation: Increases the yield — this correctly answers the question.

49. What is the effect of increasing temperature on the yield of SO□ in the Contact process?

(A) Increases the yield
(B) No effect
(C) Stops the reaction
(D) Decreases the yield

Correct Answer: D

Explanation: Decreases the yield — this correctly answers the question.

50. Which of the following is an example of an amphoteric oxide?

(A) ZnO
(B) SO□
(C) CO□
(D) Na□O

Correct Answer: A

Explanation: ZnO is an amphoteric oxide; it reacts with both acids and bases.

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Chemistry Grade 10 — Chapter 8

Organic Chemistry

by Public Library

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

A. Important / Main Topics

1. A displayed formula shows:

(A) All the bonds between atoms as individual lines
(B) Only the molecular formula
(C) Only the carbon atoms
(D) Only the functional groups

Correct Answer: A

Explanation: A displayed formula shows all the bonds between atoms as individual lines.

2. The condensed structural formula of methane is:

(A) CH□
(B) CH□
(C) CH□
(D) C□H□

Correct Answer: B

Explanation: The condensed structural formula of methane is CH□.

3. Alkenes have the general formula:

(A) C_nH□n□□
(B) C_nH□n□□
(C) C_nH□n
(D) C_nH_n

Correct Answer: C

Explanation: Alkenes have the general formula C_nH□n.

4. Which of the following is the simplest alkyne?

(A) Ethene
(B) Ethane
(C) Propene
(D) Ethyne

Correct Answer: D

Explanation: Ethyne — this correctly answers the question.

5. The IUPAC name of CH□CH□CH□CH□ is:

(A) Butane
(B) Propane
(C) Pentane
(D) Hexane

Correct Answer: A

Explanation: The IUPAC name of CH□CH□CH□CH□ is Butane.

6. Which of the following correctly represents the formula for but-2-ene?

(A) CH□ = CHCH□CH□
(B) CH□CH = CHCH□
(C) CH□CH□CH = CH□
(D) CH□C equiv CHCH□

Correct Answer: B

Explanation: CH□CH = CHCH□ — this correctly answers the question.

7. Given the molecular formula C□H□□O, which compound is most likely to be represented by this formula?

(A) Butanoic acid
(B) But-2-ene
(C) Butan-1-ol
(D) Butanal

Correct Answer: C

Explanation: Butan-1-ol — this correctly answers the question.

8. Which of the following is the correct IUPAC name for the compound with the formula CH□CH□CH□COOH?

(A) Propanoic acid
(B) Butanal
(C) Butanol
(D) Butanoic acid

Correct Answer: D

Explanation: Butanoic acid — this correctly answers the question.

9. Identify the statement which is true regarding propan-1-ol and propan-2-ol:

(A) They have the same molecular formula
(B) Both have identical condensed structural formula
(C) They are different compounds with the same structural formula
(D) Propan-1-ol is a carboxylic acid, and propan-2-ol is an ester

Correct Answer: A

Explanation: Identify the statement which is true regarding propan-1-ol and propan-2-ol They have the same molecular formula.

10. Name the compound that can be formed by the esterification of methanol and propanoic acid:

(A) Propyl methanoate
(B) Methyl propanoate
(C) Ethyl propanoate
(D) Propyl ethanoate

Correct Answer: B

Explanation: Name the compound that can be formed by the esterification of methanol and propanoic acid Methyl propanoate.

11. Which of the following molecules contains an -OH functional group?

(A) Butane
(B) Ethene
(C) Butan-1-ol
(D) But-2-yne

Correct Answer: C

Explanation: Butan-1-ol — this correctly answers the question.

12. If a compound ends in "-oic acid," what functional group must it contain?

(A) -OH
(B) -C=O
(C) -C=C-
(D) -COOH

Correct Answer: D

Explanation: -COOH — this correctly answers the question.

13. Which formula corresponds to an ester that could be formed from butan-1-ol and ethanoic acid?

(A) CH□COOCH□CH□CH□CH□

(B) CH□CH□CH□CH□COOCH□
(C) CH□CH□CH□CH□CH□COOH
(D) CH□CH□COOCH□

Correct Answer: A

Explanation: CH□COOCH□CH□CH□CH□ — this correctly answers the question.

14. Which structural formula represents butan-1-ol?

(A) CH□CH□CH□CH□COOH
(B) CH□CH□CH□CH□OH
(C) CH□CH□CH = CH□
(D) CH□CH = CHCH□

Correct Answer: B

Explanation: CH□CH□CH□CH□OH — this correctly answers the question.

15. Identify the compound based on the following information: It has the formula C□H□O and the name ends with "-ol."

(A) Propanoate
(B) Propane
(C) Propan-2-ol
(D) Propanoic acid

Correct Answer: C

Explanation: C□H□O ending in "-ol" is propan-2-ol.

16. Which of the following names is incorrect for the given formula?

(A) But-2-ene: CH□CH = CHCH□
(B) But-1-ene: CH□ = CHCH□CH□
(C) Butane: CH□CH□CH□CH□
(D) Butan-2-ol: CH□CH(OH)CH□CH□

Correct Answer: D

Explanation: Butan-2-ol is CH□CH□CH(OH)CH□, not CH□CH(OH)CH□CH□.

17. Which of the following is the correct IUPAC name for CH□CH□CH□CH□OH?

(A) Butan-1-ol
(B) Butan-2-ol
(C) Butanol
(D) Butanoic acid

Correct Answer: A

Explanation: Butan-1-ol — this correctly answers the question.

18. Which of the following is the correct IUPAC name for CH□CH□COOH?

(A) Ethanoic acid
(B) Propanoic acid
(C) Butanoic acid
(D) Propanoic acid

Correct Answer: B

Explanation: Propanoic acid — this correctly answers the question.

19. Which of the following is the correct IUPAC name for CH□CH = CHCH□?

(A) But-1-ene
(B) Butane
(C) But-2-ene
(D) Butyne

Correct Answer: C

Explanation: But-2-ene — this correctly answers the question.

20. Which of the following is the correct IUPAC name for CH□C equiv CH?

(A) Propene
(B) Propane
(C) Propanol
(D) Propyne

Correct Answer: D

Explanation: Propyne — this correctly answers the question.

21. Which of the following is the correct IUPAC name for CH□CH(OH)CH□?

(A) Propan-2-ol
(B) Propan-1-ol
(C) Propanol
(D) Propanoic acid

Correct Answer: A

Explanation: Propan-2-ol — this correctly answers the question.

22. Which of the following is the correct IUPAC name for CH□COOCH□?

(A) Ethyl methanoate
(B) Methyl ethanoate
(C) Methyl methanoate
(D) Ethyl ethanoate

Correct Answer: B

Explanation: Methyl ethanoate — this correctly answers the question.

23. Which of the following is the correct IUPAC name for HCOOCH□CH□?

(A) Methyl ethanoate
(B) Methyl methanoate
(C) Ethyl methanoate
(D) Ethyl ethanoate

Correct Answer: C

Explanation: Ethyl methanoate — this correctly answers the question.

24. Which of the following is the correct IUPAC name for CH□CH□COOCH□?

(A) Ethyl propanoate
(B) Propyl methanoate
(C) Propyl ethanoate
(D) Methyl propanoate

Correct Answer: D

Explanation: Methyl propanoate — this correctly answers the question.

25. Which of the following is the correct IUPAC name for CH□COOCH□CH□?

(A) Ethyl ethanoate
(B) Methyl ethanoate
(C) Methyl propanoate
(D) Ethyl propanoate

Correct Answer: A

Explanation: Ethyl ethanoate — this correctly answers the question.

B. Less Important / Secondary Topics

26. Which of the following is the correct IUPAC name for CH□CH□CH□COOH?

(A) Butanoic acid
(B) Propanoic acid
(C) Butanal
(D) Butanol

Correct Answer: A

Explanation: Butanoic acid — this correctly answers the question.

27. Draw the structural formula of but-1-ene and but-2-ene. What is the difference between them?

(A) Position of the hydroxyl group
(B) Position of the double bond
(C) Position of the carboxyl group
(D) Type of bond

Correct Answer: B

Explanation: In but-1-ene, the double bond is between carbon 1 and 2. In but-2-ene, the double bond is between carbon 2 and 3.

28. Draw the displayed formula of ethyl butanoate. What is its condensed formula?

(A) CH□CH□COOCH□CH□
(B) CH□COOCH□CH□CH□
(C) CH□CH□CH□COOCH□CH□
(D) CH□CH□CH□CH□COOCH□

Correct Answer: C

Explanation: Ethyl butanoate is CH□CH□CH□COOCH□CH□.

29. Given the displayed formula CH□COOCH□CH□, identify the alcohol and carboxylic acid used to form the ester.

(A) Methanol and ethanoic acid
(B) Ethanol and propanoic acid
(C) Methanol and propanoic acid
(D) Ethanol and ethanoic acid

Correct Answer: D

Explanation: The ester is ethyl ethanoate. The alcohol used is ethanol and the carboxylic acid used is ethanoic acid.

30. From the displayed formula CH□ - C equiv C - CH□, identify the compound and its type.

(A) But-2-yne
(B) But-1-yne
(C) Butane
(D) Butene

Correct Answer: A

Explanation: The compound is but-2-yne. It is an alkyne.

31. Design the synthesis pathway for converting butan-1-ol into but-1-ene.

(A) Hydration
(B) Dehydration
(C) Oxidation
(D) Reduction

Correct Answer: B

Explanation: Butan-1-ol can be converted into but-1-ene by dehydration (loss of water).

32. Compare the functional groups of esters and carboxylic acids. What is the functional group of esters?

(A) -COOH
(B) -OH
(C) -COO-
(D) -CHO

Correct Answer: C

Explanation: -COO- — this correctly answers the question.

33. Develop a table that helps you to determine the type of organic compound based on its structural formula (having two carbon atoms) and functional groups. What type of compound is CH□CH□OH?

(A) Alkane

(B) Alkene
(C) Carboxylic acid
(D) Alcohol

Correct Answer: D

Explanation: CH□CH□OH contains the -OH group, so it is an alcohol.

34. What type of compound is CH□COOH?

(A) Carboxylic acid
(B) Alkane
(C) Alkene
(D) Alcohol

Correct Answer: A

Explanation: CH□COOH contains the -COOH group, so it is a carboxylic acid.

35. What type of compound is CH□COOCH□?

(A) Alkane
(B) Ester
(C) Alkene
(D) Carboxylic acid

Correct Answer: B

Explanation: CH□COOCH□ contains the -COO- group, so it is an ester.

36. A compound has the molecular formula C□H□O□. Draw all possible structural formulas for this molecular formula.

(A) CH□CH□CH□OH, CH□COCH□
(B) CH□CH□CHO, CH□COCH□
(C) CH□CH□COOH, CH□COOCH□, HCOOCH□CH□
(D) CH□CH□CH□COOH

Correct Answer: C

Explanation: The possible structures are propanoic acid (CH□CH□COOH), methyl ethanoate (CH□COOCH□), and ethyl methanoate (HCOOCH□CH□).

37. Which of these compounds is a carboxylic acid?

(A) CH□COOCH□
(B) HCOOCH□CH□
(C) CH□CH□OH
(D) CH□CH□COOH

Correct Answer: D

Explanation: CH□CH□COOH contains the -COOH group, so it is a carboxylic acid.

38. Which of these compounds is an ester?

(A) CH□COOCH□ and HCOOCH□CH□
(B) CH□CH□COOH
(C) CH□CH□OH
(D) CH□CH□CHO

Correct Answer: A

Explanation: Both CH□COOCH□ and HCOOCH□CH□ contain the -COO- group, so they are esters.

39. Name the carboxylic acid and the ester in the given structures.

(A) Ethanoic acid; Methyl ethanoate
(B) Propanoic acid; Methyl ethanoate and ethyl methanoate
(C) Propanoic acid; Ethyl ethanoate
(D) Butanoic acid; Methyl propanoate

Correct Answer: B

Explanation: “Propanoic acid; Methyl ethanoate and ethyl methanoate” is correct: it matches the idea asked in the question (“Name the carboxylic acid and the ester in the given structures”), while the other choices do not.

40. Which of the following statements about the structure of organic compounds is correct?

(A) Each carbon atom must have three bonds
(B) Each carbon atom must have two bonds
(C) Each carbon atom must have four bonds
(D) Each carbon atom must have one bond

Correct Answer: C

Explanation: Each carbon atom must have four bonds — this correctly answers the question.

41. Draw the structural formula of but-1-ene and but-2-ene. Which of the following is but-1-ene?

(A) CH□ - CH = CH - CH□
(B) CH□ - CH□ - CH = CH□
(C) CH□ - C equiv C - CH□
(D) CH□ = CH - CH□ - CH□

Correct Answer: D

Explanation: CH□ = CH - CH□ - CH□ — this correctly answers the question.

42. Which of the following is but-2-ene?

(A) CH□ - CH = CH - CH□
(B) CH□ = CH - CH□ - CH□
(C) CH□ - CH□ - CH = CH□
(D) CH□ - C equiv C - CH□

Correct Answer: A

Explanation: CH□ - CH = CH - CH□ — this correctly answers the question.

43. What is the difference between hex-1-ene and hex-2-ene?

(A) Position of the hydroxyl group
(B) Position of the double bond
(C) Position of the carboxyl group
(D) Type of bond

Correct Answer: B

Explanation: In hex-1-ene, the double bond is between carbon 1 and 2. In hex-2-ene, the double bond is between carbon 2 and 3.

44. What is the IUPAC name of CH□ - CH = CH - CH□ - CH□?

(A) Pent-1-ene
(B) Pentane
(C) Pent-2-ene
(D) Pentyne

Correct Answer: C

Explanation: The double bond starts at carbon 2, so the name is pent-2-ene.

45. What is the IUPAC name of CH□ - CH□ - CH = CH□?

(A) But-2-ene
(B) Butane
(C) Butyne
(D) But-1-ene

Correct Answer: D

Explanation: The double bond starts at carbon 1, so the name is but-1-ene.

46. What is the IUPAC name of CH□ - CH□ - CH□ - CH□ - OH?

(A) Butan-1-ol
(B) Butan-2-ol
(C) Butanol

(D) Butanoic acid

Correct Answer: A

Explanation: The -OH group is on carbon 1, so the name is butan-1-ol.

47. What is the IUPAC name of CH□ - CH□ - CH(OH) - CH□?

(A) Butan-1-ol
(B) Butan-2-ol
(C) Butanol
(D) Butanoic acid

Correct Answer: B

Explanation: The -OH group is on carbon 2, so the name is butan-2-ol.

48. What is the IUPAC name of CH□ - CH□ - CH□ - COOH?

(A) Propanoic acid
(B) Butanal
(C) Butanoic acid
(D) Butanol

Correct Answer: C

Explanation: The compound has 4 carbon atoms and a -COOH group, so it is butanoic acid.

49. What is the IUPAC name of CH□ - CH□ - COOH?

(A) Ethanoic acid
(B) Butanoic acid
(C) Propanoic acid
(D) Propanoic acid

Correct Answer: D

Explanation: The compound has 3 carbon atoms and a -COOH group, so it is propanoic acid.

50. What is the IUPAC name of HCOOH?

(A) Methanoic acid
(B) Ethanoic acid
(C) Propanoic acid
(D) Butanoic acid

Correct Answer: A

Explanation: The compound has 1 carbon atom and a -COOH group, so it is methanoic acid.

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Chemistry Grade 10 — Chapter 9

Hydrocarbons

by Public Library

Independent practice MCQs from the supplied Class 10 Chemistry notes pack. Total: 49 questions.

A. Important / Main Topics

1. Hydrocarbons are compounds containing:

(A) Carbon and hydrogen only
(B) Carbon and oxygen only
(C) Hydrogen and oxygen only
(D) Carbon, hydrogen, and oxygen only

Correct Answer: A

Explanation: Hydrocarbons are compounds containing Carbon and hydrogen only.

2. Saturated hydrocarbons are also called:

(A) Alkenes
(B) Alkanes
(C) Alkynes
(D) Aromatics

Correct Answer: B

Explanation: Saturated hydrocarbons are also called alkanes.

3. The general formula of alkanes is:

(A) C_nH□n
(B) C_nH□n□□
(C) C_nH□n□□
(D) C_nH_n

Correct Answer: C

Explanation: The general formula of alkanes is C_nH□n□□.

4. Alkenes have the general formula:

(A) C_nH□n□□
(B) C_nH□n□□
(C) C_nH_n
(D) C_nH□n

Correct Answer: D

Explanation: Alkenes have the general formula C_nH□n.

5. Alkynes have the general formula:

(A) C_nH□n□□
(B) C_nH□n□□
(C) C_nH□n
(D) C_nH_n

Correct Answer: A

Explanation: Alkynes have the general formula C_nH□n□□.

6. Which of the following is the simplest alkene?

(A) Ethane
(B) Ethene
(C) Ethyne
(D) Propene

Correct Answer: B

Explanation: Ethene — this correctly answers the question.

7. Which of the following is the simplest alkyne?

(A) Ethene
(B) Ethane
(C) Ethyne
(D) Propene

Correct Answer: C

Explanation: Ethyne — this correctly answers the question.

8. The process of breaking large alkane molecules into smaller hydrocarbons is called:

(A) Dehydration
(B) Hydrogenation
(C) Esterification
(D) Cracking

Correct Answer: D

Explanation: Cracking is the process of breaking large alkane molecules into smaller hydrocarbons.

9. The test used to distinguish between saturated and unsaturated hydrocarbons is:

(A) Bromine water test
(B) Litmus test
(C) Limewater test
(D) Flame test

Correct Answer: A

Explanation: The bromine water test is used to distinguish between saturated and unsaturated hydrocarbons.

10. Which of the following is a fossil fuel?

(A) Wood
(B) Coal
(C) Biogas
(D) Hydrogen

Correct Answer: B

Explanation: Coal — this correctly answers the question.

11. Alkenes are classified as:

(A) Saturated hydrocarbons
(B) Aromatic hydrocarbons
(C) Unsaturated hydrocarbons
(D) None of the above

Correct Answer: C

Explanation: Alkenes are unsaturated hydrocarbons.

12. The type of bond present between the carbon atoms in alkynes is:

(A) Single covalent bond
(B) Double covalent bond
(C) Saturated covalent bond
(D) Triple covalent bond

Correct Answer: D

Explanation: The type of bond present between the carbon atoms in alkynes is Triple covalent bond.

13. Cracking of large alkane molecules requires:

(A) High temperature and catalyst
(B) Low temperature and pressure
(C) Low temperature and catalyst
(D) High temperature and high pressure

Correct Answer: A

Explanation: Cracking of large alkane molecules requires High temperature and catalyst.

14. Which of the following is a product of cracking large alkane molecules?

(A) Carbon dioxide
(B) Alkenes
(C) Water
(D) Hydrogen

Correct Answer: B

Explanation: Alkenes — this correctly answers the question.

15. The chemical test to distinguish between alkanes and alkenes involves:

(A) Limewater
(B) Litmus paper
(C) Bromine water
(D) Universal indicator

Correct Answer: C

Explanation: The chemical test to distinguish between alkanes and alkenes involves Bromine water.

16. Ethyne is commonly used for:

(A) Cooking
(B) Fuel for cars
(C) Heating
(D) Welding

Correct Answer: D

Explanation: Ethyne is commonly used for welding.

17. Fractional distillation separates petroleum into fractions based on:

(A) Boiling point
(B) Density
(C) Viscosity
(D) Solubility

Correct Answer: A

Explanation: Fractional distillation separates petroleum into fractions based on Boiling point.

18. Which property increases as you move from the bottom to the top of the fractionating column?

(A) Chain length
(B) Volatility
(C) Boiling point
(D) Viscosity

Correct Answer: B

Explanation: Volatility increases from bottom to top of the fractionating column.

19. The gasoline/petrol fraction from petroleum is primarily used for:

(A) Jet fuel
(B) Heating
(C) Car fuel
(D) Chemical feedstock

Correct Answer: C

Explanation: The gasoline/petrol fraction is used for car fuel.

20. Doubly bonded carbon atoms form which type of bond with two other atoms?

(A) Double
(B) Triple
(C) Non-covalent
(D) Single

Correct Answer: D

Explanation: Doubly bonded carbon atoms form a single bond with two other atoms.

21. Describe the bonding in alkenes.

(A) Double covalent bond
(B) Single covalent bond
(C) Triple covalent bond
(D) Ionic bond

Correct Answer: A

Explanation: "Double covalent bond" is correct: it matches the idea asked in the question ("Describe the bonding in alkenes"), while the other choices do not.

22. What are the conditions required for the cracking of alkanes?

(A) Low temperature and pressure
(B) High temperature and high pressure
(C) High temperature and pressure
(D) Low temperature and catalyst

Correct Answer: B

Explanation: High temperature and high pressure — this correctly answers the question.

23. Why is the cracking of large alkane molecules important in the petroleum industry?

(A) It produces carbon dioxide
(B) It produces water
(C) It produces smaller, more useful hydrocarbons
(D) It produces hydrogen

Correct Answer: C

Explanation: It produces smaller, more useful hydrocarbons — this correctly answers the question.

24. How can you test for the presence of an unsaturated hydrocarbon?

(A) Add limewater; if it turns milky, it is unsaturated
(B) Add litmus paper; if it turns red, it is unsaturated
(C) Add universal indicator; if it turns green, it is unsaturated
(D) Add bromine water; if it decolourises, it is unsaturated

Correct Answer: D

Explanation: Add bromine water; if it decolourises, it is unsaturated — this correctly answers the question.

B. Less Important / Secondary Topics

25. Write the symbol equation for the preparation of ethene from ethanol.

(A) CH□CH□OH → CH□ = CH□ + H□O
(B) CH□CH□OH → CH□CH□ + H□O
(C) CH□CH□OH → CH□CHO + H□
(D) CH□CH□OH → CH□ + CO

Correct Answer: A

Explanation: "CH□CH□OH → CH□ = CH□ + H□O" is correct: it matches the idea asked in the question ("Write the symbol equation for the preparation of ethene from ethanol"), while the other choices do not.

26. What type of bond is present in alkenes?

(A) Single covalent bond
(B) Double covalent bond
(C) Triple covalent bond
(D) Ionic bond

Correct Answer: B

Explanation: Double covalent bond — this correctly answers the question.

27. Name two uses of ethyne.

(A) Cooking and heating

(B) Fuel for cars and jet fuel
(C) Welding and artificial ripening of fruits
(D) Chemical feedstock and lubricants

Correct Answer: C

Explanation: Ethyne is used for welding and artificial ripening of fruits.

28. What is the principle behind the fractional distillation of petroleum?

(A) Differences in density
(B) Differences in viscosity
(C) Differences in solubility
(D) Differences in boiling points

Correct Answer: D

Explanation: Differences in boiling points — this correctly answers the question.

29. How does the boiling point of fractions change from the bottom to the top of the fractionating column?

(A) Boiling point decreases
(B) Boiling point increases
(C) Boiling point remains the same
(D) Boiling point fluctuates

Correct Answer: A

Explanation: Boiling point decreases from bottom to top of the fractionating column.

30. List two uses of the naphtha fraction obtained from petroleum.

(A) Fuel for cars and jet fuel
(B) Chemical feedstock and making drugs, plastics, and other chemicals
(C) Lubricants and waxes
(D) Paving roads and roofing materials

Correct Answer: B

Explanation: Naphtha is used as a chemical feedstock for making drugs, plastics, and other chemicals.

31. How can you distinguish between propane and propene?

(A) Limewater test
(B) Litmus test
(C) Bromine water test
(D) Flame test

Correct Answer: C

Explanation: Bromine water test — this correctly answers the question.

32. In a refinery, large alkane molecules are cracked to produce smaller alkenes and other hydrocarbons.

(A) Write conditions for cracking.
(B) Write the symbol equation for the cracking of decane to produce ethene and octane.
(C) Why cracking of large alkanes is necessary in the petroleum industry. E. Propose a method to increase the efficiency of the cracking process.
(D) Explain why alkenes are considered unsaturated hydrocarbons.

Correct Answer: D

Explanation: Alkenes are unsaturated hydrocarbons because they contain a carbon-carbon double bond.

33. Ethyne (acetylene) is a hydrocarbon, used as a fuel for welding and in artificially ripening fruits.

(A) Explain why ethyne is considered an unsaturated hydrocarbon.
(B) Explain why ethyne is an effective fuel for welding. Correct Answer: A. It contains a carbon-carbon triple bond Explanation: Ethyne is considered an unsaturated hydrocarbon because it contains a carbon-carbon triple bond. --- ### MCQ 34 What is the commercial importance of ethyne? A. Used in welding and cutting metals B. Used as a fuel for cars
(C) Used in cooking

(D) Used in heating

Correct Answer: A

Explanation: Ethyne is commonly used in cutting and welding metals.

34. What is the temperature of the oxy-acetylene flame?

(A) 1000^circ C
(B) 3200^circ C
(C) 2000^circ C
(D) 5000^circ C

Correct Answer: B

Explanation: The temperature of the oxy-acetylene flame is about 3200^circ C.

35. Which of the following statements about the rate of reaction is correct?

(A) The rate of reaction is constant throughout the reaction
(B) The rate of reaction is slowest at the beginning and speeds up over time
(C) The rate of reaction is fastest at the beginning and slows down over time
(D) The rate of reaction does not change with time

Correct Answer: C

Explanation: The rate of reaction is fastest at the beginning and slows down over time.

36. In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by:

(A) Stoichiometry
(B) Electrochemistry
(C) Thermodynamics
(D) Collision theory

Correct Answer: D

Explanation: In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by Collision theory.

37. A catalyst provides an easier pathway for a reaction by:

(A) Decreasing the activation energy
(B) Increasing the activation energy
(C) Increasing the temperature
(D) Decreasing the concentration

Correct Answer: A

Explanation: A catalyst provides an easier pathway for a reaction by Decreasing the activation energy.

38. In a Maxwell-Boltzmann curve, the area under the curve represents:

(A) The activation energy
(B) The total number of particles
(C) The reaction rate
(D) The temperature

Correct Answer: B

Explanation: In a Maxwell-Boltzmann curve, the area under the curve represents The total number of particles.

39. Which of the following is an example of a reaction that is fast at room temperature?

(A) Fermentation of glucose
(B) Digestion of food
(C) Acid-base neutralization
(D) Rusting of iron

Correct Answer: C

Explanation: Acid-base neutralization is a fast reaction, taking only a few microseconds.

40. In the Haber process, a catalyst is used to:

(A) Increase the yield of ammonia

(B) Decrease the yield of ammonia
(C) Change the equilibrium position
(D) Speed up the reaction

Correct Answer: D

Explanation: A catalyst is used to speed up the reaction, not to change the yield or equilibrium position.

41. A catalyst does NOT:

(A) Get consumed in the reaction
(B) Lower the activation energy
(C) Speed up the reaction
(D) Provide an easier pathway

Correct Answer: A

Explanation: A catalyst is not consumed in the reaction.

42. In a reaction between H□ and Cl□ to form HCl, the activated complex is:

(A) The final product
(B) A temporary, high-energy state
(C) A stable intermediate
(D) The reactant

Correct Answer: B

Explanation: The activated complex is a temporary, high-energy state.

43. The rate of a reaction can be increased by:

(A) Decreasing the temperature
(B) Decreasing the concentration of reactants
(C) Increasing the surface area of a solid reactant
(D) Adding a catalyst that increases activation energy

Correct Answer: C

Explanation: The rate of a reaction can be increased by Increasing the surface area of a solid reactant.

44. Which of the following is NOT a characteristic of enzymes?

(A) They are proteins
(B) They are highly specific
(C) They speed up reactions in living organisms
(D) They are consumed in the reaction

Correct Answer: D

Explanation: Enzymes are not consumed in the reaction.

45. Why is it important for a catalyst to remain unchanged at the end of a reaction?

(A) So it can be reused
(B) So it can change the outcome
(C) So it can increase the activation energy
(D) So it can stop the reaction

Correct Answer: A

Explanation: A catalyst is not consumed and can be recovered and reused.

46. Which of the following is a biological catalyst?

(A) Iron
(B) Enzyme
(C) Platinum
(D) Vanadium pentaoxide

Correct Answer: B

Explanation: Enzyme — this correctly answers the question.

47. The rate of reaction between two specific time intervals is called the:

(A) Instantaneous rate

(B) Initial rate
(C) Average rate
(D) Final rate

Correct Answer: C

Explanation: The rate of reaction between two specific time intervals is called the average rate of reaction.

48. Which of the following statements about the rate of reaction is correct?

(A) The rate of reaction is constant throughout the reaction
(B) The rate of reaction is slowest at the beginning and speeds up over time
(C) The rate of reaction does not change with time
(D) The rate of reaction is fastest at the beginning and slows down over time

Correct Answer: D

Explanation: The rate of reaction is fastest at the beginning and slows down over time.

49. In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by:

(A) Collision theory
(B) Stoichiometry
(C) Electrochemistry
(D) Thermodynamics

Correct Answer: A

Explanation: In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by Collision theory.

Chemistry Grade 10 — Chapter 10

Hydroxy Compounds

by Public Library

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

A. Important / Main Topics

1. What is the optimal temperature range for the fermentation of glucose to produce ethanol?

(A) 25-35°C
(B) 0-10°C
(C) 50-60°C
(D) 70-80°C

Correct Answer: A

Explanation: The optimal temperature range for fermentation is 25-35°C.

2. Which organism is used in the fermentation process to produce ethanol?

(A) Bacteria
(B) Yeast
(C) Algae
(D) Molds

Correct Answer: B

Explanation: Yeast is used in the fermentation process to produce ethanol.

3. What is the catalyst used in the catalytic hydration of ethene to ethanol?

(A) Sulfuric acid
(B) Hydrochloric acid
(C) Phosphoric acid
(D) Nitric acid

Correct Answer: C

Explanation: Phosphoric acid is used as a catalyst in the catalytic hydration of ethene.

4. What is the primary by-product of ethanol fermentation?

(A) Methane
(B) Oxygen
(C) Water
(D) Carbon dioxide

Correct Answer: D

Explanation: Carbon dioxide is the primary by-product of ethanol fermentation.

5. Which of the following is a major advantage of using ethanol as a fuel?

(A) Clean burning
(B) High cost
(C) Non-renewable
(D) Low energy density

Correct Answer: A

Explanation: Clean burning — this correctly answers the question.

6. What is the chemical formula for ethanol?

(A) CH□OH
(B) CH□CH□OH
(C) C□H□
(D) CH□OCH□

Correct Answer: B

Explanation: The chemical formula for ethanol is CH□CH□OH.

7. Which process requires high pressure and temperature for ethanol production?

(A) Fermentation
(B) Distillation
(C) Catalytic hydration
(D) Sublimation

Correct Answer: C

Explanation: Catalytic hydration — this correctly answers the question.

8. Ethanol combustion primarily produces:

(A) CO and H□O
(B) CO□ and H□
(C) CO and H□
(D) CO□ and H□O

Correct Answer: D

Explanation: Ethanol combustion primarily produces CO□ and H□O.

9. What is the disadvantage of ethanol production through fermentation?

(A) Slow process
(B) High-temperature requirement
(C) High-pressure requirement
(D) Uses non-renewable resources

Correct Answer: A

Explanation: Slow process — this correctly answers the question.

10. Which industry uses alcohol extensively as a solvent?

(A) Agriculture
(B) Pharmaceuticals
(C) Mining
(D) Construction

Correct Answer: B

Explanation: The pharmaceutical industry uses alcohol extensively as a solvent.

11. Which of the following is NOT a use of ethanol in the pharmaceutical industry?

(A) As a solvent
(B) As a disinfectant
(C) As a fuel
(D) As an antiseptic

Correct Answer: C

Explanation: Ethanol is not used as a fuel in the pharmaceutical industry.

12. Which of the following is a disadvantage of using ethanol as a fuel?

(A) It is renewable
(B) It has a high octane number
(C) It reduces carbon monoxide emissions
(D) It can corrode engine materials

Correct Answer: D

Explanation: Ethanol can corrode engine materials due to its hygroscopic nature.

13. What is the role of ethanol in the production of herbal extracts?

(A) It acts as a solvent
(B) It acts as a catalyst
(C) It acts as a reactant
(D) It acts as a product

Correct Answer: A

Explanation: Ethanol acts as a solvent in the production of herbal extracts.

14. Which of the following is NOT a property of ethanol that makes it useful in cosmetics?

(A) Antibacterial
(B) Corrosive
(C) Antiviral
(D) Antifungal

Correct Answer: B

Explanation: Ethanol is not corrosive; it is antibacterial, antiviral, and antifungal.

15. Which of the following is a major advantage of using ethanol as a fuel?

(A) It is non-renewable
(B) It produces more pollutants
(C) It is renewable
(D) It has a low octane number

Correct Answer: C

Explanation: It is renewable — this correctly answers the question.

16. Which of the following is an example of a primary alcohol?

(A) Propan-2-ol
(B) Butan-2-ol
(C) Butan-2-ol
(D) Propan-1-ol

Correct Answer: D

Explanation: Propan-1-ol — this correctly answers the question.

17. Which of the following is an example of a secondary alcohol?

(A) Propan-2-ol
(B) Propan-1-ol
(C) Butan-1-ol
(D) Butan-1-ol

Correct Answer: A

Explanation: Propan-2-ol — this correctly answers the question.

18. What is the product of the combustion of ethanol?

(A) CO□ and H□
(B) CO□ and H□O
(C) CO and H□O
(D) CO and H□

Correct Answer: B

Explanation: CO□ and H□O — this correctly answers the question.

19. Which of the following is a disadvantage of using alcohols as fuel?

(A) They are renewable
(B) They have a high octane number
(C) They are hygroscopic
(D) They reduce emissions

Correct Answer: C

Explanation: Alcohols are hygroscopic, which is a disadvantage.

20. Which of the following is NOT a role of alcohols in the cosmetic industry?

(A) Antibacterial
(B) Antiviral
(C) Antifungal
(D) Antiseptic

Correct Answer: D

Explanation: Alcohols are used as antiseptics, but this is not the only role.

21. Explain why ethanol is considered a renewable fuel.

(A) It is produced from plants
(B) It is produced from crude oil
(C) It is produced from coal
(D) It is produced from natural gas

Correct Answer: A

Explanation: Ethanol is considered a renewable fuel because it is produced from plants such as sugar cane.

22. Describe how ethanol is used in the pharmaceutical industry.

(A) As a fuel
(B) As a solvent
(C) As a lubricant
(D) As a colouring agent

Correct Answer: B

Explanation: Ethanol is used in the pharmaceutical industry as a solvent.

23. What is the role of alcohols in the cosmetic industry?

(A) They act as preservatives
(B) They act as colouring agents
(C) They act as antibacterial agents
(D) They act as fragrances

Correct Answer: C

Explanation: Alcohols act as antibacterial agents in cosmetics.

24. Explain the combustion of ethanol. Write the balanced chemical equation.

(A) CH□CH□OH + 2O□ → 2CO□ + 3H□O + heat
(B) CH□CH□OH + O□ → CO□ + H□O + heat
(C) CH□CH□OH + 4O□ → 2CO□ + 3H□O + heat
(D) CH□CH□OH + 3O□ → 2CO□ + 3H□O + heat

Correct Answer: D

Explanation: "CH□CH□OH + 3O□ → 2CO□ + 3H□O + heat" is correct: it matches the idea asked in the question ("Explain the combustion of ethanol. Write the balanced chemical equation"), while the other choices do not.

25. List two advantages and two disadvantages of using ethanol as a fuel.

(A) Advantages: renewable, reduces emissions; Disadvantages: corrosive, hygroscopic
(B) Advantages: non-renewable, high cost; Disadvantages: clean, renewable
(C) Advantages: renewable, high cost; Disadvantages: corrosive, hygroscopic
(D) Advantages: renewable, reduces emissions; Disadvantages: non-renewable, high cost

Correct Answer: A

Explanation: Ethanol is renewable and reduces emissions, but it is corrosive and hygroscopic.

B. Less Important / Secondary Topics

26. Compare the advantages and disadvantages of fermentation and catalytic hydration for ethanol production.

(A) Fermentation: renewable, slow; Hydration: non-renewable, fast
(B) Fermentation: non-renewable, slow; Hydration: renewable, fast
(C) Fermentation: renewable, fast; Hydration: non-renewable, slow
(D) Fermentation: non-renewable, fast; Hydration: renewable, slow

Correct Answer: A

Explanation: Fermentation uses renewable resources and is slow; hydration uses non-renewable resources and is fast.

27. Explain the role of ethanol in the pharmaceutical industry.

(A) As a fuel
(B) As a solvent and disinfectant
(C) As a lubricant
(D) As a colouring agent

Correct Answer: B

Explanation: Ethanol is used in the pharmaceutical industry as a solvent and disinfectant.

28. Explain the role of ethanol in the cosmetic industry.

(A) As a fragrance
(B) As a colouring agent
(C) As an antibacterial and antifungal agent
(D) As a preservative

Correct Answer: C

Explanation: Ethanol is used in the cosmetic industry as an antibacterial and antifungal agent.

29. Evaluate the environmental impact of the two ethanol production methods.

(A) Fermentation: higher impact; Hydration: lower impact
(B) Fermentation: no impact; Hydration: high impact
(C) Fermentation: high impact; Hydration: no impact
(D) Fermentation: lower impact; Hydration: higher impact

Correct Answer: D

Explanation: Fermentation uses renewable resources and has a lower environmental impact; hydration uses non-renewable resources and has a higher environmental impact.

30. Explain why alcohols are considered cleaner fuels compared to fossil fuels.

(A) They produce fewer harmful emissions
(B) They produce more harmful emissions
(C) They are non-renewable
(D) They are more expensive

Correct Answer: A

Explanation: "They produce fewer harmful emissions" is correct: it matches the idea asked in the question ("Explain why alcohols are considered cleaner fuels compared to fossil fuels"), while the other choices do not.

31. Compare the advantages and disadvantages of the two methods of ethanol production in terms of energy efficiency, cost, and environmental impact.

(A) Fermentation: high energy, high cost, high impact; Hydration: low energy, low cost, low impact
(B) Fermentation: low energy, low cost, low impact; Hydration: high energy, high cost, high impact
(C) Fermentation: low energy, high cost, high impact; Hydration: high energy, low cost, low impact
(D) Fermentation: high energy, low cost, low impact; Hydration: low energy, high cost, high impact

Correct Answer: B

Explanation: "Fermentation: low energy, low cost, low impact; Hydration: high energy, high cost, high impact" is correct: it matches the idea asked in the question ("Compare the advantages and disadvantages of the two methods of ethanol production in terms of energy efficiency, cost, and environmental impact"), while the other choices do not.

32. Analyse the impact of replacing traditional fossil fuels with alcohol-based fuels in terms of emissions and energy efficiency.

(A) Higher emissions, higher energy efficiency
(B) Lower emissions, higher energy efficiency
(C) Lower emissions, lower energy efficiency
(D) Higher emissions, lower energy efficiency

Correct Answer: C

Explanation: "Lower emissions, lower energy efficiency" is correct: it matches the idea asked in the question ("Analyse the impact of replacing traditional fossil fuels with alcohol-based fuels in terms of emissions and energy efficiency"), while the other choices do not.

33. What is the main component of vinegar?

(A) Ethanol
(B) Methanol
(C) Propanoic acid
(D) Ethanoic acid

Correct Answer: D

Explanation: Ethanoic acid is the main component of vinegar.

34. What gas is produced when a carboxylic acid reacts with a metal?

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

Correct Answer: A

Explanation: Hydrogen gas is produced when a carboxylic acid reacts with a metal.

35. Which compound is formed by the bacterial oxidation of ethanol?

(A) Methanoic acid
(B) Ethanoic acid
(C) Propanoic acid
(D) Butanoic acid

Correct Answer: B

Explanation: Ethanoic acid — this correctly answers the question.

36. What type of bond is formed between a carboxylic acid and an alcohol during esterification?

(A) Ionic bond
(B) Hydrogen bond
(C) Covalent bond
(D) Metallic bond

Correct Answer: C

Explanation: A covalent bond is formed between a carboxylic acid and an alcohol during esterification.

37. Which of the following is an example of a carboxylic acid?

(A) Ethanol
(B) Ethyl acetate
(C) Methanol
(D) Ethanoic acid

Correct Answer: D

Explanation: Ethanoic acid — this correctly answers the question.

38. In the oxidation of ethanol to ethanoic acid, what is the role of potassium manganate(VII)?

(A) Oxidizing agent
(B) Reducing agent
(C) Catalyst
(D) Inhibitor

Correct Answer: A

Explanation: Potassium manganate(VII) acts as an oxidizing agent.

39. What is produced when ethanoic acid reacts with sodium hydroxide?

(A) Sodium chloride
(B) Sodium ethanoate
(C) Sodium oxide
(D) Sodium bicarbonate

Correct Answer: B

Explanation: Sodium ethanoate — this correctly answers the question.

40. Which of the following is an ester?

(A) Ethanoic acid
(B) Ethanol
(C) Ethyl ethanoate
(D) Ethanal

Correct Answer: C

Explanation: Ethyl ethanoate — this correctly answers the question.

41. Write the balanced chemical equation for the reaction between ethanoic acid and sodium.

(A) CH□COOH + Na → CH□COONa + H□
(B) CH□COOH + 2Na → CH□COONa + H□
(C) 2CH□COOH + Na → 2CH□COONa + H□
(D) 2CH□COOH + 2Na → 2CH□COONa + H□

Correct Answer: D

Explanation: "2CH□COOH + 2Na → 2CH□COONa + H□" is correct: it matches the idea asked in the question ("Write the balanced chemical equation for the reaction between ethanoic acid and sodium"), while the other choices do not.

42. Describe how ethanoic acid can be formed from ethanol using an oxidizing agent.

(A) Ethanol is oxidized to ethanal, then to ethanoic acid
(B) Ethanol is reduced to ethanal, then to ethanoic acid
(C) Ethanol is oxidized to ethane, then to ethanoic acid
(D) Ethanol is reduced to ethane, then to ethanoic acid

Correct Answer: A

Explanation: Ethanol is oxidized to ethanal, which is further oxidized to ethanoic acid.

43. What is the role of sulfuric acid in the esterification process?

(A) It acts as a reactant
(B) It acts as a catalyst
(C) It acts as a solvent
(D) It acts as a product

Correct Answer: B

Explanation: Sulfuric acid acts as a catalyst in the esterification process.

44. Name the salt formed when ethanoic acid reacts with sodium carbonate.

(A) Sodium chloride
(B) Sodium oxide
(C) Sodium ethanoate
(D) Sodium bicarbonate

Correct Answer: C

Explanation: "Sodium ethanoate" is correct: it matches the idea asked in the question ("Name the salt formed when ethanoic acid reacts with sodium carbonate"), while the other choices do not.

45. Write the chemical equation for the esterification reaction between methanol and ethanoic acid.

(A) CH□COOH + CH□OH → CH□COOCH□
(B) CH□COOH + CH□OH → CH□COOCH□ + H□
(C) CH□COOH + CH□OH → CH□COOCH□ + O□
(D) CH□COOH + CH□OH → CH□COOCH□ + H□O

Correct Answer: D

Explanation: "CH□COOH + CH□OH → CH□COOCH□ + H□O" is correct: it matches the idea asked in the question ("Write the chemical equation for the esterification reaction between methanol and ethanoic acid"), while the other choices do not.

46. What is the main component of vinegar? Give two uses of vinegar in everyday life.

(A) Ethanoic acid; pickles and flavouring food
(B) Ethanol; fuel and disinfectant
(C) Methanoic acid; preservative and flavouring

(D) Propanoic acid; pickles and flavouring

Correct Answer: A

Explanation: The main component of vinegar is ethanoic acid. It is used to make pickles and for flavouring food.

47. Explain why lemon juice is used to reduce the smell of fish.

(A) It contains ethanoic acid
(B) It contains ascorbic acid
(C) It contains citric acid
(D) It contains benzoic acid

Correct Answer: B

Explanation: Lemon juice contains ascorbic acid, which is used to reduce the smell of fish.

48. What is the role of benzoic acid and sodium benzoate in food preservation?

(A) They enhance the flavour of food
(B) They add colour to food
(C) They inhibit the growth of bacteria and fungi
(D) They increase the nutritional value of food

Correct Answer: C

Explanation: Benzoic acid and sodium benzoate are used as preservatives to inhibit the growth of bacteria and fungi.

49. Explain the use of esters in the fragrance industry.

(A) They have sour smells
(B) They have bitter tastes
(C) They have salty tastes
(D) They have pleasant, fruity smells

Correct Answer: D

Explanation: Esters have pleasant, fruity smells and are used in the fragrance industry.

50. What is the use of aspirin? What type of compound is aspirin?

(A) Fever reducer and pain killer; ester
(B) Fever reducer and pain killer; carboxylic acid
(C) Antiseptic; ester
(D) Antiseptic; carboxylic acid

Correct Answer: A

Explanation: Aspirin is used as a fever reducer and pain killer. It is an ester.

Chemistry Grade 10 — Chapter 11

Carboxylic Compounds

by Public Library

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

A. Important / Main Topics

1. Carboxylic acids are characterized by the presence of:

(A) Carboxyl group (-COOH)
(B) Hydroxyl group (-OH)
(C) Carbonyl group (C=O)
(D) Amino group (-NH□)

Correct Answer: A

Explanation: Carboxylic acids are characterized by the presence of Carboxyl group (-COOH).

2. The general formula of carboxylic acids is:

(A) ROH
(B) RCOOH
(C) RCOOR
(D) RCHO

Correct Answer: B

Explanation: The general formula of carboxylic acids is RCOOH.

3. The carboxyl group is made up of:

(A) A hydroxyl group and an amino group
(B) A carbonyl group and an amino group
(C) A carbonyl group and a hydroxyl group
(D) Two hydroxyl groups

Correct Answer: C

Explanation: The carboxyl group is made up of a carbonyl group (C=O) and a hydroxyl group (-OH).

4. Carboxylic acids are _____ than mineral acids.

(A) Stronger
(B) Equally strong
(C) Not comparable
(D) Weaker

Correct Answer: D

Explanation: Carboxylic acids are weaker acids than mineral acids.

5. When a carboxylic acid reacts with a base, the products are:

(A) Salt and water
(B) Salt and hydrogen
(C) Salt and carbon dioxide
(D) Salt and oxygen

Correct Answer: A

Explanation: When a carboxylic acid reacts with a base, the products are Salt and water.

6. When a carboxylic acid reacts with a carbonate, the products are:

(A) Salt and hydrogen
(B) Salt, water, and carbon dioxide
(C) Salt and water
(D) Salt and oxygen

Correct Answer: B

Explanation: When a carboxylic acid reacts with a carbonate, the products are Salt, water, and carbon dioxide.

7. When a carboxylic acid reacts with an active metal, the products are:

(A) Salt and water
(B) Salt and carbon dioxide
(C) Salt and hydrogen
(D) Salt and oxygen

Correct Answer: C

Explanation: When a carboxylic acid reacts with an active metal, the products are Salt and hydrogen.

8. The reaction between a carboxylic acid and an alcohol in the presence of concentrated sulphuric acid is called:

(A) Saponification
(B) Neutralization
(C) Oxidation
(D) Esterification

Correct Answer: D

Explanation: The reaction between a carboxylic acid and an alcohol is called esterification.

9. Esters are usually significant for their:

(A) Fruity smell
(B) Sour smell
(C) Bitter taste
(D) Salty taste

Correct Answer: A

Explanation: Esters are usually significant for their Fruity smell.

10. The reaction in which two molecules combine with the elimination of a small molecule like water is called:

(A) Addition reaction
(B) Condensation reaction
(C) Substitution reaction
(D) Elimination reaction

Correct Answer: B

Explanation: A reaction in which two molecules combine with the elimination of a small molecule is called a condensation reaction.

11. What is the product of the reaction between ethanoic acid and sodium carbonate?

(A) Sodium propanoate
(B) Sodium hydroxide
(C) Sodium acetate
(D) Sodium chloride

Correct Answer: C

Explanation: Sodium acetate — this correctly answers the question.

12. Which catalyst is used in the esterification reaction between a carboxylic acid and an alcohol?

(A) Potassium manganate(VII)
(B) Sodium hydroxide
(C) Hydrochloric acid
(D) Sulfuric acid

Correct Answer: D

Explanation: Sulfuric acid is used as a catalyst in esterification.

13. What is the main component of vinegar?

(A) Ethanoic acid
(B) Ethanol

(C) Methanol
(D) Propanoic acid

Correct Answer: A

Explanation: Ethanoic acid is the main component of vinegar.

14. What gas is produced when a carboxylic acid reacts with a metal?

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

Correct Answer: B

Explanation: Hydrogen gas is produced when a carboxylic acid reacts with a metal.

15. Which compound is formed by the bacterial oxidation of ethanol?

(A) Methanoic acid
(B) Propanoic acid
(C) Ethanoic acid
(D) Butanoic acid

Correct Answer: C

Explanation: Ethanoic acid — this correctly answers the question.

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(A) Ionic bond
(B) Hydrogen bond
(C) Metallic bond
(D) Covalent bond

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Explanation: A covalent bond is formed between a carboxylic acid and an alcohol during esterification.

17. Which of the following is an example of a carboxylic acid?

(A) Ethanoic acid
(B) Ethanol
(C) Ethyl acetate
(D) Methanol

Correct Answer: A

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(D) Sodium bicarbonate

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Explanation: Sodium ethanoate — this correctly answers the question.

20. Which of the following is an ester?

(A) Ethanoic acid
(B) Ethanol

(C) Ethanal
(D) Ethyl ethanoate

Correct Answer: D

Explanation: Ethyl ethanoate — this correctly answers the question.

21. Write the balanced chemical equation for the reaction between ethanoic acid and sodium.

(A) 2CH□COOH + 2Na → 2CH□COONa + H□
(B) CH□COOH + Na → CH□COONa + H□
(C) CH□COOH + 2Na → CH□COONa + H□
(D) 2CH□COOH + Na → 2CH□COONa + H□

Correct Answer: A

Explanation: "2CH□COOH + 2Na → 2CH□COONa + H□" is correct: it matches the idea asked in the question ("Write the balanced chemical equation for the reaction between ethanoic acid and sodium"), while the other choices do not.

22. Describe how ethanoic acid can be formed from ethanol using an oxidizing agent.

(A) Ethanol is reduced to ethanal, then to ethanoic acid
(B) Ethanol is oxidized to ethanal, then to ethanoic acid
(C) Ethanol is oxidized to ethane, then to ethanoic acid
(D) Ethanol is reduced to ethane, then to ethanoic acid

Correct Answer: B

Explanation: Ethanol is oxidized to ethanal, which is further oxidized to ethanoic acid.

23. What is the role of sulfuric acid in the esterification process?

(A) It acts as a reactant
(B) It acts as a solvent
(C) It acts as a catalyst
(D) It acts as a product

Correct Answer: C

Explanation: Sulfuric acid acts as a catalyst in the esterification process.

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(B) Sodium oxide
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(D) Sodium ethanoate

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(B) CH□COOH + CH□OH → CH□COOCH□
(C) CH□COOH + CH□OH → CH□COOCH□ + H□
(D) CH□COOH + CH□OH → CH□COOCH□ + O□

Correct Answer: A

Explanation: "CH□COOH + CH□OH → CH□COOCH□ + H□O" is correct: it matches the idea asked in the question ("Write the chemical equation for the esterification reaction between methanol and ethanoic acid"), while the other choices do not.

B. Less Important / Secondary Topics

26. What is the main component of vinegar? Give two uses of vinegar in everyday life.

(A) Ethanoic acid; pickles and flavouring food
(B) Ethanol; fuel and disinfectant
(C) Methanoic acid; preservative and flavouring

(D) Propanoic acid; pickles and flavouring

Correct Answer: A

Explanation: The main component of vinegar is ethanoic acid. It is used to make pickles and for flavouring food.

27. Explain why lemon juice is used to reduce the smell of fish.

(A) It contains ethanoic acid
(B) It contains ascorbic acid
(C) It contains citric acid
(D) It contains benzoic acid

Correct Answer: B

Explanation: Lemon juice contains ascorbic acid, which is used to reduce the smell of fish.

28. What is the role of benzoic acid and sodium benzoate in food preservation?

(A) They enhance the flavour of food
(B) They add colour to food
(C) They inhibit the growth of bacteria and fungi
(D) They increase the nutritional value of food

Correct Answer: C

Explanation: Benzoic acid and sodium benzoate are used as preservatives to inhibit the growth of bacteria and fungi.

29. Explain the use of esters in the fragrance industry.

(A) They have sour smells
(B) They have bitter tastes
(C) They have salty tastes
(D) They have pleasant, fruity smells

Correct Answer: D

Explanation: Esters have pleasant, fruity smells and are used in the fragrance industry.

30. What is the use of aspirin? What type of compound is aspirin?

(A) Fever reducer and pain killer; ester
(B) Fever reducer and pain killer; carboxylic acid
(C) Antiseptic; ester
(D) Antiseptic; carboxylic acid

Correct Answer: A

Explanation: Aspirin is used as a fever reducer and pain killer. It is an ester.

31. Which of the following is NOT a use of carboxylic acids in everyday life?

(A) Vinegar for cooking
(B) Ethanol as a fuel
(C) Lemon juice for flavouring food
(D) Benzoic acid as a preservative

Correct Answer: B

Explanation: Ethanol as a fuel is not a use of carboxylic acids.

32. Which of the following is an example of an ester used as a flavouring agent?

(A) Ethanoic acid
(B) Ethanol
(C) Methyl butyrate
(D) Sodium benzoate

Correct Answer: C

Explanation: Methyl butyrate is an ester used as a flavouring agent (apple flavour).

33. Which of the following is a use of esters in the pharmaceutical industry?

(A) As a solvent
(B) As an antiseptic

(C) As a preservative
(D) As a pain killer (aspirin)

Correct Answer: D

Explanation: Aspirin is an ester used as a pain killer.

34. Which of the following is a use of carboxylic acids in the food industry?

(A) As a preservative
(B) As a fuel
(C) As a solvent
(D) As a catalyst

Correct Answer: A

Explanation: Carboxylic acids are used as preservatives in the food industry.

35. Which of the following is NOT a property of carboxylic acids?

(A) They are weak acids
(B) They have a fruity smell
(C) They react with bases to form salts
(D) They react with alcohols to form esters

Correct Answer: B

Explanation: They have a fruity smell — this correctly answers the question.

36. Which of the following is an ester?

(A) Ethanoic acid
(B) Ethanol
(C) Ethyl ethanoate
(D) Ethanal

Correct Answer: C

Explanation: Ethyl ethanoate — this correctly answers the question.

37. Which of the following is a use of esters in the cosmetic industry?

(A) As a preservative
(B) As a solvent
(C) As a colouring agent
(D) As a fragrance

Correct Answer: D

Explanation: Esters are used as fragrances in the cosmetic industry.

38. Which of the following is a use of carboxylic acids in the textile industry?

(A) As an acid-reducing agent
(B) As a dye
(C) As a catalyst
(D) As a solvent

Correct Answer: A

Explanation: Methanoic acid is used as an acid-reducing agent in the textile industry.

39. Which of the following is a use of esters in the food industry?

(A) As a preservative
(B) As a flavouring agent
(C) As a colouring agent
(D) As a solvent

Correct Answer: B

Explanation: Esters are used as flavouring agents in the food industry.

40. Which of the following is an example of a carboxylic acid used in everyday life?

(A) Ethanol
(B) Ethyl ethanoate

(C) Ethanoic acid
(D) Ethanal

Correct Answer: C

Explanation: Ethanoic acid is a carboxylic acid used in everyday life (vinegar).

41. Propanoic acid reacts with sodium hydroxide according to the following equation: CH□CH□COOH + NaOH → CH□CH□COONa + H□O If 4 moles of propanoic acid react with excess sodium hydroxide, how many moles of sodium propanoate are produced?

(A) 1 mole
(B) 2 moles
(C) 8 moles
(D) 4 moles

Correct Answer: D

Explanation: 4 moles — this correctly answers the question.

42. What is the molar mass of sodium propanoate?

(A) 96 g/mol
(B) 82 g/mol
(C) 74 g/mol
(D) 60 g/mol

Correct Answer: A

Explanation: 96 g/mol — this correctly answers the question.

43. What is the mass of sodium propanoate produced from 4 moles of propanoic acid?

(A) 328 g
(B) 384 g
(C) 296 g
(D) 240 g

Correct Answer: B

Explanation: 384 g — this correctly answers the question.

44. If the actual yield is 350 g, what is the percentage yield?

(A) 85.00%
(B) 90.00%
(C) 91.15%
(D) 95.00%

Correct Answer: C

Explanation: 91.15% — this correctly answers the question.

45. Methanol reacts with ethanoic acid to form methyl ethanoate: CH□COOH + CH□OH → CH□COOCH□ + H□O If 3 moles of methanol react with excess ethanoic acid, how many moles of methyl ethanoate are produced?

(A) 1 mole
(B) 2 moles
(C) 6 moles
(D) 3 moles

Correct Answer: D

Explanation: 3 moles — this correctly answers the question.

46. What is the molar mass of methyl ethanoate?

(A) 74 g/mol
(B) 60 g/mol
(C) 46 g/mol
(D) 88 g/mol

Correct Answer: A

Explanation: 74 g/mol — this correctly answers the question.

47. What is the mass of methyl ethanoate produced from 3 moles of methanol?

(A) 180 g
(B) 222 g
(C) 148 g
(D) 296 g

Correct Answer: B

Explanation: 222 g — this correctly answers the question.

48. If the actual yield is 180 g, what is the percentage yield?

(A) 75.00%
(B) 85.00%
(C) 81.08%
(D) 90.00%

Correct Answer: C

Explanation: 81.08% — this correctly answers the question.

49. Ethanoic acid reacts with sodium hydroxide according to the following equation: CH□COOH + NaOH → CH□COONa + H□O If 2 moles of ethanoic acid react with excess sodium hydroxide, how many moles of sodium ethanoate are produced?

(A) 1 mole
(B) 3 moles
(C) 4 moles
(D) 2 moles

Correct Answer: D

Explanation: 2 moles — this correctly answers the question.

50. What is the molar mass of sodium ethanoate?

(A) 82 g/mol
(B) 60 g/mol
(C) 96 g/mol
(D) 74 g/mol

Correct Answer: A

Explanation: 82 g/mol — this correctly answers the question.

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Chemistry Grade 10 — Chapter 12

Polymers

by Public Library

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

A. Important / Main Topics

1. Polymers are large molecules built up from many smaller molecules called:

(A) Monomers
(B) Dimers
(C) Trimers
(D) Isomers

Correct Answer: A

Explanation: Polymers are large molecules built up from many smaller molecules called monomers.

2. The joining up of many monomers to form a big molecule is called:

(A) Cracking
(B) Polymerisation
(C) Fractional distillation
(D) Esterification

Correct Answer: B

Explanation: Polymerisation is the joining up of many monomers to form a big molecule.

3. Which of the following is an addition polymer?

(A) Nylon-6,6
(B) PET
(C) Polyethylene
(D) Polyester

Correct Answer: C

Explanation: Polyethylene is an addition polymer.

4. Which of the following is a condensation polymer?

(A) Polyethylene
(B) Polypropylene
(C) PVC
(D) Nylon-6,6

Correct Answer: D

Explanation: Nylon-6,6 is a condensation polymer.

5. The repeating unit of the addition polymer formed from ethene is:

(A) -CH□-CH□-
(B) -CH-CH-
(C) -CH□-CH-
(D) -C-C-

Correct Answer: A

Explanation: The repeating unit of polyethylene is -CH□-CH□-.

6. Nylon-6,6 is an example of a:

(A) Polyester
(B) Polyamide
(C) Polysaccharide
(D) Polyurethane

Correct Answer: B

Explanation: Nylon-6,6 is an example of a Polyamide.

7. Which of the following processes produces water as a by-product?

(A) Addition polymerisation
(B) Hydrogenation
(C) Condensation polymerisation
(D) Hydrolysis

Correct Answer: C

Explanation: Condensation polymerisation produces water as a by-product.

8. Which of the following is NOT a property of plastics?

(A) They are lightweight
(B) They are durable
(C) They are versatile in application
(D) They are easily decomposed by microorganisms

Correct Answer: D

Explanation: Plastics are not easily decomposed by microorganisms.

9. Polyesters are formed from:

(A) Dicarboxylic acids and diols
(B) Dicarboxylic acids and diamines
(C) Diols and diamines
(D) Monocarboxylic acids and diols

Correct Answer: A

Explanation: Polyesters are formed from dicarboxylic acids and diols.

10. Which of the following is an environmental challenge caused by plastics?

(A) They are biodegradable
(B) They accumulate in oceans
(C) They are easily recycled
(D) They are non-toxic when burned

Correct Answer: B

Explanation: They accumulate in oceans — this correctly answers the question.

11. What type of linkage is found in polyamides?

(A) Ester linkage
(B) Glycosidic linkage
(C) Amide linkage
(D) Phosphodiester linkage

Correct Answer: C

Explanation: Amide linkage — this correctly answers the question.

12. Which statement is NOT true about PET?

(A) It is a polyester
(B) It can be converted back into monomers and re-polymerised
(C) It is used in textiles
(D) It cannot be recycled

Correct Answer: D

Explanation: PET can be recycled; it can be converted back into monomers and re-polymerised.

13. What is a major environmental challenge caused by plastics?

(A) They accumulate in oceans
(B) They are biodegradable
(C) They are easily recycled
(D) They are non-toxic when burned

Correct Answer: A

Explanation: They accumulate in oceans — this correctly answers the question.

14. The monomer used to form polypropylene is:

(A) CH□ = CH□
(B) CH□ = CH - CH□
(C) CH□ = CHCl
(D) CH□ - CH□

Correct Answer: B

Explanation: Polypropylene is formed from propene (CH□ = CH - CH□).

15. The monomer used to form PVC is:

(A) CH□ = CH□
(B) CH□ = CH - CH□
(C) CH□ = CHCl
(D) CH□ - CH□

Correct Answer: C

Explanation: PVC is formed from vinyl chloride (CH□ = CHCl).

16. What is the repeating unit of polypropylene?

(A) -CH□ - CH□ -
(B) -CH□ - CHCl -
(C) -CH□ - CH□ - CH□ -
(D) -CH□ - CH(CH□) -

Correct Answer: D

Explanation: The repeating unit of polypropylene is -CH□ - CH(CH□) -.

17. Which of the following is an example of a condensation polymer?

(A) Nylon-6,6
(B) Polyethylene
(C) Polypropylene
(D) PVC

Correct Answer: A

Explanation: Nylon-6,6 is a condensation polymer.

18. Name the linkage found in polyesters.

(A) Amide linkage
(B) Ester linkage
(C) Glycosidic linkage
(D) Phosphodiester linkage

Correct Answer: B

Explanation: "Ester linkage" is correct: it matches the idea asked in the question ("Name the linkage found in polyesters"), while the other choices do not.

19. What are the monomers required to form Nylon-6,6?

(A) Terephthalic acid and ethylene glycol
(B) Ethene and propene
(C) Hexamethylenediamine and adipic acid
(D) Vinyl chloride and ethene

Correct Answer: C

Explanation: Nylon-6,6 is formed from hexamethylenediamine and adipic acid.

20. Explain one environmental challenge associated with the disposal of plastics in landfills.

(A) Plastics decompose quickly
(B) Plastics are biodegradable
(C) Plastics are easily recycled
(D) Plastics take up a lot of space and leach chemicals

Correct Answer: D

Explanation: "Plastics take up a lot of space and leach chemicals" is correct: it matches the idea asked in the question ("Explain one environmental challenge associated with the disposal of plastics in landfills"), while the other choices do not.

21. Describe the structure of PET.

(A) It is a polyester with ester linkages
(B) It is a polyamide with amide linkages
(C) It is an addition polymer
(D) It is a polyurethane

Correct Answer: A

Explanation: PET is a polyester with ester linkages.

22. Why is PET considered recyclable?

(A) It is biodegradable
(B) It undergoes acid hydrolysis to produce monomers
(C) It dissolves in water
(D) It melts easily

Correct Answer: B

Explanation: PET undergoes acid hydrolysis to produce its monomers (terephthalic acid and ethylene glycol), which can be reused.

23. How are addition polymers formed from monomers?

(A) By condensation reactions with release of small molecules
(B) By hydrolysis
(C) By adding monomer units without losing small molecules
(D) By oxidation

Correct Answer: C

Explanation: Addition polymers are formed by adding monomer units without losing small molecules.

24. What is released during the formation of condensation polymers?

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

Correct Answer: D

Explanation: Water is released during the formation of condensation polymers.

25. What is the repeating unit in the polymer formed from ethylene glycol and terephthalic acid?

(A) -OC - C□H□ - COO - CH□ - CH□ - O-
(B) -NH - (CH□)□ - NH - CO - (CH□)□ - CO-
(C) -CH□ - CH□ -
(D) -CH□ - CHCl -

Correct Answer: A

Explanation: The repeating unit of PET is -OC - C□H□ - COO - CH□ - CH□ - O-.

B. Less Important / Secondary Topics

26. Why is PET widely used in textiles?

(A) It is durable, quick-drying, and retains colour well
(B) It is biodegradable
(C) It is soluble in water
(D) It is a good conductor of electricity

Correct Answer: A

Explanation: PET is widely used in textiles because it is durable, quick-drying, and retains colour well.

27. What is a key difference between polyamides and polyesters?

(A) Polyamides contain ester linkages; polyesters contain amide linkages
(B) Polyamides contain amide linkages; polyesters contain ester linkages
(C) Polyamides are addition polymers; polyesters are condensation polymers
(D) Polyamides are biodegradable; polyesters are not

Correct Answer: B

Explanation: Polyamides contain amide linkages; polyesters contain ester linkages — this correctly answers the question.

28. What is one benefit of recycling PET?

(A) It increases the need for raw materials
(B) It increases plastic waste
(C) It reduces the need for raw materials and minimizes plastic waste
(D) It produces more toxic gases

Correct Answer: C

Explanation: Recycling PET reduces the need for raw materials and minimizes plastic waste.

29. What is released during the formation of condensation polymers?

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

Correct Answer: D

Explanation: Water is released during the formation of condensation polymers.

30. Give an example of a condensation polymer.

(A) PET
(B) Polyethylene
(C) Polypropylene
(D) PVC

Correct Answer: A

Explanation: PET is an example of a condensation polymer.

31. How do the properties of plastics depend on their polymer structure?

(A) Linear polymers are softer; branched polymers are stronger
(B) Linear polymers are stronger and more rigid; branched polymers are softer and more flexible
(C) All polymers have the same properties
(D) Polymer structure does not affect properties

Correct Answer: B

Explanation: Linear polymers are stronger and more rigid; branched polymers are softer and more flexible.

32. What are two environmental challenges associated with plastic disposal?

(A) Biodegradation and recycling
(B) Incineration and composting
(C) Landfill disposal and ocean accumulation
(D) Solubility and density

Correct Answer: C

Explanation: Landfill disposal and ocean accumulation are two major environmental challenges associated with plastic disposal.

33. Which of the following is NOT a use of polymers in the textile industry?

(A) Polyester for clothing
(B) Nylon for ropes
(C) PE for food packaging
(D) PVC for pipes

Correct Answer: D

Explanation: PVC for pipes is not a use of polymers in the textile industry.

34. Which of the following is a property of polyester (PET)?

(A) Shrinking and stretching resistance
(B) Low durability
(C) Slow drying
(D) Poor colour retention

Correct Answer: A

Explanation: Shrinking and stretching resistance — this correctly answers the question.

35. Which of the following is a property of nylon-6,6?

(A) Low strength
(B) High elasticity
(C) Poor resistance to abrasion
(D) Soluble in water

Correct Answer: B

Explanation: High elasticity — this correctly answers the question.

36. Which of the following is a use of polyethylene (PE)?

(A) Clothing
(B) Ropes
(C) Food packaging
(D) Carpets

Correct Answer: C

Explanation: Polyethylene (PE) is used for food packaging.

37. What is the major environmental challenge caused by plastics in oceans?

(A) They dissolve in water
(B) They are biodegradable
(C) They are easily recycled
(D) They accumulate and harm marine life

Correct Answer: D

Explanation: They accumulate and harm marine life — this correctly answers the question.

38. What is the process of breaking down PET into its monomers called?

(A) Acid hydrolysis
(B) Addition polymerisation
(C) Condensation polymerisation
(D) Esterification

Correct Answer: A

Explanation: Acid hydrolysis — this correctly answers the question.

39. Which of the following is a toxic gas released during the burning of plastics?

(A) Oxygen
(B) Dioxins
(C) Nitrogen
(D) Hydrogen

Correct Answer: B

Explanation: Dioxins are toxic gases released during the burning of plastics.

40. Which of the following is a property of plastics that makes them difficult to dispose of?

(A) Biodegradability
(B) Solubility in water
(C) Durability
(D) Low molecular weight

Correct Answer: C

Explanation: Durability — this correctly answers the question.

41. Which of the following is a use of polyesters?

(A) Food packaging
(B) Ropes
(C) Carpets
(D) Textile clothing fibers

Correct Answer: D

Explanation: Polyesters are used for textile clothing fibers.

42. Which of the following is NOT a property of plastics?

(A) Easily decomposed by microorganisms
(B) Lightweight
(C) Durable
(D) Versatile in application

Correct Answer: A

Explanation: Plastics are not easily decomposed by microorganisms.

43. PET is formed from terephthalic acid and ethylene glycol. What type of polymer is PET?

(A) Polyamide
(B) Polyester
(C) Addition polymer
(D) Polyurethane

Correct Answer: B

Explanation: PET is a polyester (condensation polymer).

44. What is the repeating unit of PET?

(A) -NH - (CH□)□ - NH - CO - (CH□)□ - CO-
(B) -CH□ - CH□ -
(C) -OC - C□H□ - COO - CH□ - CH□ - O-
(D) -CH□ - CHCl -

Correct Answer: C

Explanation: The repeating unit of PET is -OC - C□H□ - COO - CH□ - CH□ - O-.

45. What small molecule is released during the formation of PET?

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

Correct Answer: D

Explanation: Water is released during the formation of PET.

46. What type of linkage is formed in PET?

(A) Ester linkage
(B) Amide linkage
(C) Glycosidic linkage
(D) Phosphodiester linkage

Correct Answer: A

Explanation: Ester linkage — this correctly answers the question.

47. Nylon-6,6 is formed from hexamethylenediamine and adipic acid. What type of polymer is Nylon-6,6?

(A) Polyester
(B) Polyamide
(C) Addition polymer

(D) Polyurethane

Correct Answer: B

Explanation: Nylon-6,6 is a polyamide (condensation polymer).

48. What is the repeating unit of Nylon-6,6?

(A) -OC - C□H□ - COO - CH□ - CH□ - O-

(B) -CH□ - CH□ -

(C) -NH - (CH□)□ - NH - CO - (CH□)□ - CO-

(D) -CH□ - CHCl -

Correct Answer: C

Explanation: The repeating unit of Nylon-6,6 is -NH - (CH□)□ - NH - CO - (CH□)□ - CO-.

49. What small molecule is released during the formation of Nylon-6,6?

(A) Oxygen

(B) Hydrogen

(C) Carbon dioxide

(D) Water

Correct Answer: D

Explanation: Water is released during the formation of Nylon-6,6.

50. What type of linkage is formed in Nylon-6,6?

(A) Amide linkage

(B) Ester linkage

(C) Glycosidic linkage

(D) Phosphodiester linkage

Correct Answer: A

Explanation: Amide linkage — this correctly answers the question.

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Chemistry Grade 10 — Chapter 13

Biochemistry

by Public Library

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

A. Important / Main Topics

1. Which of the following is NOT a function of proteins in the body?

(A) Storing genetic information
(B) Acting as enzymes
(C) Providing structural support
(D) Transporting molecules

Correct Answer: A

Explanation: Storing genetic information — this correctly answers the question.

2. Which of the following best describes proteins?

(A) Polysaccharides
(B) Polymers of amino acids
(C) Chains of fatty acids
(D) Simple sugars

Correct Answer: B

Explanation: Proteins are polymers of amino acids.

3. Which bond is responsible for linking amino acids together in a protein?

(A) Hydrogen bond
(B) Ionic bond
(C) Peptide bond
(D) Covalent bond

Correct Answer: C

Explanation: Peptide bond — this correctly answers the question.

4. Which of the following is a component of nucleic acids?

(A) Amino acid
(B) Fatty acid
(C) Glucose
(D) Phosphate group

Correct Answer: D

Explanation: Phosphate group is a component of nucleic acids.

5. Which of the following is a characteristic of vitamins?

(A) They are essential for normal body function
(B) They provide energy directly
(C) They are inorganic molecules
(D) They are a primary source of protein

Correct Answer: A

Explanation: Vitamins are essential for normal body function.

6. Which vitamin is important for vision and immune function and is fat-soluble?

(A) Vitamin C
(B) Vitamin A
(C) Vitamin B12
(D) Vitamin K

Correct Answer: B

Explanation: Vitamin A is important for vision and immune function.

7. Which acid carries genetic information?

(A) Amino acid
(B) Sulphuric acid
(C) Nucleic acid
(D) Ascorbic acid

Correct Answer: C

Explanation: Nucleic acid — this correctly answers the question.

8. Which vitamin helps the body absorb calcium and is fat-soluble?

(A) Vitamin B12
(B) Vitamin C
(C) Vitamin E
(D) Vitamin D

Correct Answer: D

Explanation: Vitamin D — this correctly answers the question.

9. Which of the following is a primary function of lipids in the body?

(A) Long-term energy storage
(B) Providing immediate energy
(C) Storing genetic information
(D) Catalyzing biochemical reactions

Correct Answer: A

Explanation: Lipids are important for long-term energy storage.

10. Which vitamin is essential for blood clotting?

(A) Vitamin A
(B) Vitamin K
(C) Vitamin C
(D) Vitamin D

Correct Answer: B

Explanation: Vitamin K is essential for blood clotting.

11. Amino acids are the basic structural unit of:

(A) Carbohydrates
(B) Lipids
(C) Proteins
(D) Nucleic acids

Correct Answer: C

Explanation: Amino acids are the basic structural unit of proteins.

12. Which of the following is an example of a carbohydrate?

(A) Alanine
(B) Palmitic acid
(C) Adenine
(D) Glucose

Correct Answer: D

Explanation: Glucose is an example of a carbohydrate.

13. The general formula of carbohydrates is:

(A) C_x(H□O)_y
(B) RCOOH
(C) ROH
(D) C_nH□n□□

Correct Answer: A

Explanation: The general formula of carbohydrates is C_x(H□O)_y.

14. Which of the following is a function of nucleic acids?

(A) Providing energy
(B) Carrying genetic information
(C) Acting as enzymes
(D) Storing fat

Correct Answer: B

Explanation: Carrying genetic information — this correctly answers the question.

15. Which of the following is a fat-soluble vitamin?

(A) Vitamin C
(B) Vitamin B
(C) Vitamin A
(D) Vitamin B12

Correct Answer: C

Explanation: Vitamin A — this correctly answers the question.

16. How does the body make protein?

(A) Through photosynthesis
(B) Through respiration
(C) Through digestion
(D) Through protein synthesis using amino acids

Correct Answer: D

Explanation: Through protein synthesis using amino acids — this correctly answers the question.

17. What do vitamins do for our body?

(A) Support metabolic functions
(B) Provide energy directly
(C) Store genetic information
(D) Form cell membranes

Correct Answer: A

Explanation: Support metabolic functions — this correctly answers the question.

18. How do parents protect their children from genetic disorders?

(A) Through vaccination
(B) Through parental screening tests
(C) Through surgery
(D) Through medication

Correct Answer: B

Explanation: Parents can protect their children from genetic disorders through parental screening tests.

19. Differentiate between genetic engineering and gene therapy.

(A) Genetic engineering treats disease; gene therapy modifies DNA
(B) Both are the same
(C) Genetic engineering modifies DNA; gene therapy treats or prevents disease
(D) Neither involves DNA

Correct Answer: C

Explanation: "Genetic engineering modifies DNA; gene therapy treats or prevents disease" is correct: it matches the idea asked in the question ("Differentiate between genetic engineering and gene therapy"), while the other choices do not.

20. How is gene cloning different from therapeutic cloning?

(A) Gene cloning produces stem cells; therapeutic cloning copies DNA
(B) Both are the same
(C) Neither involves DNA

(D) Gene cloning copies DNA segments; therapeutic cloning produces embryonic stem cells

Correct Answer: D

Explanation: Gene cloning copies DNA segments; therapeutic cloning produces embryonic stem cells — this correctly answers the question.

21. Which of the following is a function of carbohydrates?

(A) Providing energy to the body
(B) Long-term energy storage
(C) Carrying genetic information
(D) Acting as enzymes

Correct Answer: A

Explanation: Providing energy to the body — this correctly answers the question.

22. Which of the following is a function of lipids?

(A) Providing immediate energy
(B) Long-term energy storage
(C) Storing genetic information
(D) Catalyzing biochemical reactions

Correct Answer: B

Explanation: Lipids are important for long-term energy storage.

23. Which of the following is a function of proteins?

(A) Storing genetic information
(B) Providing immediate energy
(C) Acting as enzymes
(D) Forming cell membranes

Correct Answer: C

Explanation: Acting as enzymes — this correctly answers the question.

24. Which of the following is a function of nucleic acids?

(A) Providing energy
(B) Acting as enzymes
(C) Storing fat
(D) Carrying genetic information

Correct Answer: D

Explanation: Carrying genetic information — this correctly answers the question.

25. Which vitamin is important for vision and immune function and is fat-soluble?

(A) Vitamin A
(B) Vitamin C
(C) Vitamin B12
(D) Vitamin K

Correct Answer: A

Explanation: Vitamin A is important for vision and immune function.

B. Less Important / Secondary Topics

26. Which vitamin helps the body absorb calcium and is fat-soluble?

(A) Vitamin D
(B) Vitamin B12
(C) Vitamin C
(D) Vitamin E

Correct Answer: A

Explanation: Vitamin D — this correctly answers the question.

27. Which vitamin is essential for blood clotting?

(A) Vitamin A
(B) Vitamin K
(C) Vitamin C
(D) Vitamin D

Correct Answer: B

Explanation: Vitamin K is essential for blood clotting.

28. Which of the following is a component of nucleic acids?

(A) Amino acid
(B) Fatty acid
(C) Phosphate group
(D) Glucose

Correct Answer: C

Explanation: Phosphate group is a component of nucleic acids.

29. Which bond is responsible for linking amino acids together in a protein?

(A) Hydrogen bond
(B) Ionic bond
(C) Covalent bond
(D) Peptide bond

Correct Answer: D

Explanation: Peptide bond — this correctly answers the question.

30. Which of the following best describes proteins?

(A) Polymers of amino acids
(B) Polysaccharides
(C) Chains of fatty acids
(D) Simple sugars

Correct Answer: A

Explanation: Proteins are polymers of amino acids.

31. Which of the following is NOT a function of proteins in the body?

(A) Acting as enzymes
(B) Storing genetic information
(C) Providing structural support
(D) Transporting molecules

Correct Answer: B

Explanation: Storing genetic information — this correctly answers the question.

32. Which of the following is a characteristic of vitamins?

(A) They provide energy directly
(B) They are inorganic molecules
(C) They are essential for normal body function
(D) They are a primary source of protein

Correct Answer: C

Explanation: Vitamins are essential for normal body function.

33. Which acid carries genetic information?

(A) Amino acid
(B) Sulphuric acid
(C) Ascorbic acid
(D) Nucleic acid

Correct Answer: D

Explanation: Nucleic acid — this correctly answers the question.

34. Which of the following is a primary function of lipids in the body?

(A) Long-term energy storage
(B) Providing immediate energy
(C) Storing genetic information
(D) Catalyzing biochemical reactions

Correct Answer: A

Explanation: Lipids are important for long-term energy storage.

35. Which of the following is an example of a carbohydrate?

(A) Alanine
(B) Glucose
(C) Palmitic acid
(D) Adenine

Correct Answer: B

Explanation: Glucose is an example of a carbohydrate.

36. Define nucleic acids and explain their significance.

(A) Short-chain molecules that provide energy
(B) Proteins that act as enzymes
(C) Long-chain organic molecules that carry genetic information
(D) Lipids that store energy

Correct Answer: C

Explanation: Nucleic acids are long-chain organic molecules that carry genetic information.

37. What is gene therapy? How does it work?

(A) A technique that modifies DNA to enhance capabilities
(B) A technique that produces genetically identical organisms
(C) A technique that copies specific genes
(D) A medical technique that modifies genes to treat or prevent disease

Correct Answer: D

Explanation: Gene therapy is a medical technique that modifies genes to treat or prevent disease.

38. What is genetic engineering? Give one application.

(A) A process that modifies DNA; used in producing vaccines
(B) A process that treats disease; used in medicine
(C) A process that produces identical organisms; used in agriculture
(D) A process that copies genes; used in research

Correct Answer: A

Explanation: Genetic engineering modifies DNA and is used in producing vaccines.

39. What is cloning? Name the three types of cloning.

(A) Creating a new organism; reproductive, therapeutic, gene
(B) Creating a genetically identical copy; reproductive, therapeutic, gene
(C) Modifying DNA; reproductive, therapeutic, gene
(D) Copying genes; reproductive, therapeutic, gene

Correct Answer: B

Explanation: Cloning is creating a genetically identical copy. The three types are reproductive, therapeutic, and gene cloning.

40. How do pregnancy tests use biochemical principles to detect pregnancy?

(A) By detecting glucose in urine
(B) By detecting protein in blood
(C) By detecting the hormone hCG in urine or blood
(D) By detecting lipids in blood

Correct Answer: C

Explanation: By detecting the hormone hCG in urine or blood — this correctly answers the question.

41. Explain the process of cloning in biochemistry.

(A) Modifying DNA to enhance capabilities
(B) Treating disease by modifying genes
(C) Copying specific genes
(D) Creating a genetically identical copy

Correct Answer: D

Explanation: Cloning is the creation of a genetically identical copy.

42. What is the difference between genetic engineering and gene therapy?

(A) Genetic engineering modifies DNA; gene therapy treats or prevents disease
(B) Genetic engineering treats disease; gene therapy modifies DNA
(C) Both are the same
(D) Neither involves DNA

Correct Answer: A

Explanation: Genetic engineering modifies DNA; gene therapy treats or prevents disease — this correctly answers the question.

43. Which of the following is NOT a function of nucleic acids?

(A) Carrying genetic information
(B) Catalyzing biochemical reactions
(C) Storing hereditary information
(D) Transferring genetic data from one generation to another

Correct Answer: B

Explanation: Catalyzing biochemical reactions — this correctly answers the question.

44. Which of the following is a function of proteins?

(A) Storing genetic information
(B) Providing immediate energy
(C) Acting as enzymes
(D) Forming cell membranes

Correct Answer: C

Explanation: Acting as enzymes — this correctly answers the question.

45. Which of the following is a function of carbohydrates?

(A) Long-term energy storage
(B) Carrying genetic information
(C) Acting as enzymes
(D) Providing energy to the body

Correct Answer: D

Explanation: Providing energy to the body — this correctly answers the question.

46. Which of the following is a function of lipids?

(A) Long-term energy storage
(B) Providing immediate energy
(C) Storing genetic information
(D) Catalyzing biochemical reactions

Correct Answer: A

Explanation: Lipids are important for long-term energy storage.

47. Which vitamin is important for vision and immune function and is fat-soluble?

(A) Vitamin C
(B) Vitamin A
(C) Vitamin B12
(D) Vitamin K

Correct Answer: B

Explanation: Vitamin A is important for vision and immune function.

48. Which vitamin helps the body absorb calcium and is fat-soluble?

(A) Vitamin B12
(B) Vitamin C
(C) Vitamin D
(D) Vitamin E

Correct Answer: C

Explanation: Vitamin D — this correctly answers the question.

49. Which vitamin is essential for blood clotting?

(A) Vitamin A
(B) Vitamin C
(C) Vitamin D
(D) Vitamin K

Correct Answer: D

Explanation: Vitamin K is essential for blood clotting.

50. Which of the following is a component of nucleic acids?

(A) Phosphate group
(B) Amino acid
(C) Fatty acid
(D) Glucose

Correct Answer: A

Explanation: Phosphate group is a component of nucleic acids.