C KALAIPRIYA MSc.,B.Ed.,

PG ASSISTANT CHEMISTRY

SSV MATRIC HR.SEC .SCHOOL

PERUNDURAI

VIII PHYSICAL SCIENCE

LESSON 3,4,11,12, 13

3.HEAT

I. Choose the best answer.

1. Heat is a form of _____.

a) electrical energy b) gravitational energy c) thermal energy d) None of these

2. If you apply some heat energy to a substance, which of the following can take place in it?

a) Expansion b) Increase in temperature c) Change of state d) All the above.

3. Which of the following substances will absorb more heat energy?

a) Solid b) Liquid c) Gas d) All the above

4. If you apply equal amount of heat to a solid, liquid and gas individually, which of the following will have more expansion?

a) Solid b) Liquid c) Gas d) All of them

5. The process of converting a liquid into a solid is called_____.

a) sublimation b) condensation c) freezing d) deposition

6. Conduction is the heat transfer which takes place in a_____.

a) solid b) liquid c) gas d) All of them

11. AIR

7.Which of the following is true about oxygen?

a) Completely burning gas b) Partially burning gasc) Doesn't support burning d) Supports burning

8. Aerated water contains

a) air b) oxygen c) carbon dioxide d) nitrogen

9. Solvay process is a method to manufacture

a) lime water b) aerated water c) distilled water d) sodium carbonate

10. Carbon dioxide with water changes

a) blue litmus to red b) red litmus to blue c) blue litmus to yellow d) doesn't react with litmus

11.Which of the following is known as azote?

a) Oxygen b) Nitrogen c) Sulphur d) Carbon dioxide

12.ATOMIC STRUCTURE

12. The same proportion of carbon and oxygen in the carbon dioxide obtained from different sources proves the law of _____

a) reciprocal proportion b) definite proportion c) multiple proportion d) conservation of mass

13. Cathode rays are made up of

a) neutral particles b) positively charged particles c) negatively charged particles d) None of the above

14. In water, hydrogen and oxygen are combined in the ratio of _____by mass.

a)1:8 b) 8:1 c) 2:3 d) 1:3

15.Which of the following statements made by Dalton has not undergone any change?

a) Atoms cannot be broken. b) Atoms combine in small, whole numbers to form compounds.

c) Elements are made up of atoms. d) All atoms of an elements are alike

16.In all atoms of an element

a) the atomic and the mass number are same. b) the mass number is same and the atomic number is different.

c) the atomic number is same and the mass number is different

d) both atomic and mass numbers may vary

5. ELECTRICITY

17. When an ebonite rod is rubbed with fur, the charge acquired by the fur is

(a) negative (b) positive (c) partly positive and partly negative (d) None of these

18. The electrification of two different bodies on rubbing is because of the transfer of

a) neutrons b) protons c) electrons d) protons and neutrons

19. Which of the following a simple circuit must have?

a) Energy Source, Battery, Load b) Energy Source, Wire, Load c) Energy Source, Wire, Switch

d) Battery, Wire, Switch

20. An electroscope has been charged by induction with the help of charged glass rod. The charge on the electroscope is

a) negative b) positive c) both positive and negative d) None of the above

21. Fuse is

a) a switch b) a wire with low resistance c) a wire with high resistance d) a protective device for breaking an electric circuit

13.Water

22 Water changes to ice at

a) 0°cb) 100°c c) 102°C d) 98°c

23. Solubility of carbon dioxide in water is high when the

a) pressure is low b) pressure is high c) temperature is high d) None of the above

24.The gas collected at the cathode on electrolysis of water is

a) oxygen b) hydrogen c) nitrogen d) carbon dioxide

25. Which of the following is a water pollutant?

a) Lead b) Alum c) Oxygen d) Chlorine

26. Permanent hardness of water is due to the presence of _____

a) sulphates and chlorides b) dust particles c) carbonates and bicarbonates d) other soluble particles

II FILL IN THE BLANKS

4.HEAT

1. A calorimeter is a device used to measure the_____.

2. _____ is defined as the amount of heat required to raise the temperature of 1kg of a substance by 1°C1

3. A thermostat is a device which maintains _____.

4. The process of converting a substance from gaseous state to solid state is called _____.

5. If you apply heat energy, the temperature of a system will _____.

11. Air

6. If the temperature of a liquid in a container is decreased, then the interatomic distance will……..

7. _____ is called as vital life.

8. Nitrogen is _____ than air.

9. _____ is used as a fertilizer.

10. Dry ice is used as a _____.

11.. The process of conversion of iron into hydrated form of oxides is called…….

12. ATOMIC STRUCTURE

12._____ is the smallest particle of an element.

13. An element is composed of _____ atoms.

14. An atom is made up of _____, _____ and _____.

15. A negatively charged ion is called _____, while positively charged ion is called _____

16. _____ is a negatively charged particle (Electron/Proton).

17. Proton is deflected towards the charged plate (positively, negatively)

5.ELECTRICITY

18. _____takes place by rubbing objects together.

19.. The body which has lost electrons becomes _____

20. _____ is a device that protects building from lightning strike.

21. _____ has a thin metallic filament that melts and breaks the connection when the circuit is overheated.

22. Three bulbs are connected end to end from the battery. This connection is called----------

13. WATER

23. Water is colourless, odourless and _____

24. The boiling point of water is _____

25. Temporary hardness of water can be removed by _____ of water.

26.The density of water is maximum at _____

27. Loading speeds up the process of----------

III STATE TRUE OR FALSE. IF FALSE CORRECT THE STATEMENT

4.HEAT

1. The applied heat energy can be realised as an increase in the average kinetic energy of the molecules.

2. The dimensions of a substance are increased if the temperature of the substance is decreased.

3. The process of converting a substance from solid state to gaseous state is called condensation.

4. Convection is the process by which the thermal energy flows in solids.

5. The amount of heat gained by a substance is equal to the product of its mass and latent heat.

6. In a thermos flask, the silvered walls reflect and radiate the heat outside.

5.ELECTRICITY

7. The charge acquired by an ebonite rod rubbed with a piece of flannel is negative.

8. A charged body induces an opposite charge on an uncharged body when they are brought near.

9. Electroscope is a device used to charge a body by induction.

10. Water can conduct electricity.

11. In parallel circuit, current remains the same in all components

13. WATER

12. Sewage should be treated well before being discharged it into water bodies.

13.Sea water is suitable for irrigation as it contains dissolved salts.

14.. Excessive use of chemical fertilizers depletes the soil and causes water pollution.

15. The density of water will not change at all temperature?

16. Soap lathers well in hard water.

IV . Match the following.

4.HEAT

1.Conduction - Liquid

2.Convection - Gas to liquid

3.Radiation - Solid to gas

4.Sublimation - Vaccum

5.Condensation - Solid

11.AIR

6.Nitrogen - Respiration in living animals

7.Oxygen - Fertilizer

8.Carbon - dioxide Refrigerator

9.Dry ice Fire - extinguisher

12.ATOMIC STRUCTURE

10. Law of conservation of mass -Sir William Crookes

11. Law of constant Proportion - James Chadwick

12.Cathode rays - Joseph Proust

13.Anode rays - Lavoisier

14.Neutrons - Goldstein

5.ELECTRICITY

15. Two similar charges - acquires a positive harge

16.Two dissimilar Charges - prevents a circuit from overheating

17.When glass rod is rubbed with silk - repel each other

18.When ebonite rod is rubbed with fur - attract each other

19.Fuse - acquires a negative

13.WATER

20.Universal solvent - Water pollutant

21.Hard water - Kills germs

22.Boiling - Ozonisation

23. Sterilization - Water

24.Sewage - Stomach ailments

V Consider the statements given below and choose the correct option.

4.HEAT

1. Assertion: Radiation is a form of heat transfer which takes place only in vacuum.

Reason: The thermal energy is transferred from one part of a substance to another part without the actual movement of the atoms or molecules.

2. Assertion: A system can be converted from one state to another state.

Reason: It takes place when the temperature of the system is constant.

a. Both assertion and reason are true and reason is the correct explanation of assertion.

b. Both assertion and reason are true, but reason is not the correct explanation of assertion.

c. Assertion is true, but the reason is false.

d. Assertion is false, but the reason is true

5.ELECTRICITY

3.Assertion: People struck by lightning receive a severe electrical shock.

Reason: Lightning carries very high voltage.

4. Assertion: It is safer to stand under a tall tree during lightning

Reason: It will make you the target for lightning.

a) Both assertion and reason are true and reason is the correct explanation of assertion.

b) Both assertion and reason are true and reason is not the correct explanation of assertion.

c) Assertion is true but reason is false.

d) Assertion is false but reason is true.

VI NUMERICAL PROBLEMS

4.HEAT

1. An iron ball requires 1000 J of heat to raise its temperature by 20°C. Calculate the heat capacity of the ball.
2. The heat capacity of the vessel of mass 100 kg is 8000 J/°K. Find its specific heat capacity.

VII ANSWER THE FOLLOWING QUESTIONS

4.HEAT

1. What are the applications of conduction in our daily life?
2. What are the effects of heat?
3. Name three types of heat transfer.
4. What is conduction?
5. Write a note on convection.
6. Define specific heat capacity.
7. Define one calorie.

11.AIR

8. Mention the physical properties of oxygen.
9. List out the uses of nitrogen.

10 Write about the reaction of nitrogen with non metals.

11. What is global warming?

12.What is dry ice? What are its uses?

12.ATOMIC STRUCTURE

13 State the law of conservation of mass.

14. State the law of constant proportions.
15. Write the properties of anode rays.

16.Define valency of an element with respect to hydrogen.

17. Define the term ions or radicals.
18. What is a chemical equation?

19. Write the names of the following compounds.

a) CO b) N2O c) NO2 d) PCl5

20. Find the valency of the element which is underlined in the following formula.

a) NaCl b) CO_2 c) Al (PO_4) d) Ba (NO_3)$_2$ e) $CaCl_2$

21 Write the chemical formula for the following compounds

a) Aluminium sulphate b) Silver nitrate c) Magnesium oxide d) Barium chloride

22. Write the skeleton equation for the following word equation and then balance them.

a) Carbon + Oxygen → Carbon dioxide

b) Phosphorus + Chlorine → Phosphorus pentachloride.

c) Sulphur + Oxygen → Sulphur dioxide

d) Magnesium + hydrogen chloride → Magnesium chloride + Hydrogen

23. Balance the following chemical equation.

a) $Na + O_2 \rightarrow Na_2O$ b) $Ca + N_2 \rightarrow Ca_3N_2$ c) $N_2 + H_2 \rightarrow NH_3$ d) $CaCO_3 + HCl \rightarrow CaCl_2 + CO_2 + H_2O$

e) $Pb(NO_3)_2 \rightarrow PbO + NO_2 + O_2$

5.ELECTRICITY

24. How charges are produced by friction?

25.What is earthing?

26.What is electric circuit?

27. What is electroplating?

28.Give some uses of electroplating

13. WATER

29. Name the gas evolved at cathode and anode when water is electrolysed. State their ratio by volume.

30. State the importance of dissolved oxygen and carbon dioxide in water.

31. What are the causes of temporary hardness and permanent hardness of water?

32.Explain specific latent heat of vaporization of water.

33.What are the methods of removing hardness of water?

VIII Define the following.

13.WATER

1. Freezing point

2. Boiling point

3. Specific heat capacity

4. Latent heat of fusion

5. Potable water

IX Give reasons for the following.

5.ELECTRICITY

1. When a glass rod is rubbed with silk cloth both get charged.

2. When a comb is rubbed with dry hair it attracts small bits of paper.

3. When you touch the metal disc of an electroscope with a charged glass rod the metal leaves get diverged.

4. In an electroscope the connecting rod and the leaves are all metals.

5. One should not use an umbrella while crossing an open field during thunderstorm.

13.WATER

6. Alum is added to water in sedimentation tanks.

7.Water is a universal solvent.

8. Ice floats on water.

9. Aquatic animals can breathe in water.

10.Sea water is unfit for drinking.

11. Hard water is not good for washing utensils.

X. Answer in detail.

4.HEAT

1. With the help of a neat diagram, explain the working of a calorimeter.

2. Write a note on thermostat.

3. Explain the working of thermos flask

11.AIR

4. What happens when carbon dioxide is passed through lime water? Write the equation for this reaction.

5. Name the compounds produced when the following substances burn in oxygen.

a) Carbon b) Sulphur c) Phosphorous d) Magnesium e) Iron f) Sodium

6. How does carbon dioxide react with the following?

a) Potassium b) Lime water c) Sodium hydroxide

7.What are the effects of acid rain? How can we prevent them?

5.ELECTRICITY

8. Explain three ways of charge transfer.

9.What is electroscope? Explain how it works.

10. Explain series and parallel circuit.

11. How lightning takes place?

12. What is electroplating? Explain how it is done.

13.WATER

13 How is water purified at a water purification plant?

14. What is permanent hardness of water? How can it be removed?

15.What is Electrolysis? Explain the electrolysis of water.

16. Explain the different ways by which water

XI. Higher Order Thinking Questions.

4.HEAT

1. Why does the bottom of a lake not freeze in severe winter though the surface is all frozen?

2. Which one of the following statements about thermal conductivity is correct? Give reason.

a) Steel > Wood > Water b) Steel > Water > Wood c) Water > Steel > Wood d) Water > Wood > Steel

11. AIR

3.Soda bottle bursts sometimes when it is opened during summer. Why?

4.. It is said that sleeping beneath the tree during night is not good for health. What is the reason?

5.Why does the fish die when it is taken out of water?

6. How do astronauts breathe when they go beyond earth's atmosphere?

12.ATOMIC STRUCTURE

7. Why does a light paddle wheel placed in the path of cathode rays begin to rotate, when cathode rays fall on it?

8. How can we prove that the electrons carry negative charge?

9. Ruthresh, Hari, Kanishka and Thahera collected different samples of water from a well, a pond, a river and underground water. All these samples were sent to a testing laboratory. The test result showed the ratio of hydrogen to oxygen as 1:8.

a) What conclusion would you draw from the above experiment?

b) Which law of chemical combination does it obey?