EXERCISES

1. Define the following terms
   a) An element
   b) An atom
   c) A mixture
   d) A compound
   e) A solution
   f) Chemistry
   g) Matter
   h) Freezing point
   i) Evaporating
   j) Sublimation
   k) Melting
   l) Condensing
2. Differentiate the following terms
   a) Miscible liquids from Immiscible liquids
   b) Chemical change from physical change
   c) Solute from solvent
   d) Boiling point from melting point
   e) Saturated solution from unsaturated solution
3. State any six laboratory rules
4. Why shouldn't a student enter the chemistry laboratory without the permission of the subject teacher?
5. Why shouldn't a student taste anything she or he finds in the chemistry laboratory without permission of the subject teacher?
6. Give three applications of chemistry
7. Which of the following are not matters? Give a reason for your answer.
   a) Gasoline
   b) Air
   c) Hunger
   d) Beaker
   e) Water
   f) Iron
   g) Anger
   h) Mercury
   i) Cowardice
   j) Handsome
   k) A wooden chair
   l) Plastic cup
   m) Thirst
   n) Beauty
8. Name three states of matter
9. Name three substances that sublime
10. State two differences between solids and liquids
11. State two differences between solids and gases
12. State two differences between gases and liquids
13. Name two substances that are gases under normal conditions
14. Name two substances that are solids under normal conditions
15. Name two substances that are gases under normal conditions
16. What is the physical state of the following matters under normal conditions:
    a) Carbon dioxide
    b) Mercury
    c) Oxygen
    d) Phosphorus
    e) Water
    f) Ethanol
    g) Gold
17. Which parts of the Bunsen burner carry out the following functions:
    a) Controlling the amount of the air entering
    b) Lets in air
    c) Lets in the fuel gas
    d) Allows the gaseous mixture to go up just before burning
18. Name two types of Bunsen burner flames you know
19. Give four differences between the flames you have named in (18) above.
20. Give four differences between a compound and a mixture
21. Classify the following substances into mixtures, compounds and elements. Give a reason for your choice of answer.
    a) Carbon
    b) Water
    c) Brass
    d) Calcium sulphate
    e) Air
    f) Salt plus sugar
    g) Glucose
    h) Mercury
    i) Copper
    j) Silicon
    k) Charcoal
    l) Sodium chloride
    m) Salt solution
    n) Iron
    o) Sulphuric acid
    p) Bronze
    q) Steel
    r) Hydrogen

22. Classify the following changes into either physical or chemical changes. Give a reason for each of your choices.
    a) Burning of firewood
    b) Melting of sulphur
    c) Rusting of iron
    d) Dissolving of sugar in water
    e) Milk left standing for hours and turning sour
    f) Decanting of a mixture of chalk and water
    g) Photosynthesis
    h) Burning of a paper
    i) Magnetization of iron
    j) Respiration
    k) Digestion of food
    l) Decaying of green herbs
    m) An electric wire conduct electric current
    n) Changing water to steam
    o) Lighting of a candle
    p) Drying clothes on a line
    q) Sublimation of ammonium chloride
    r) Burning of sulphur in air
    s) Ripening of green banana
23. Matter exists in three main states such as solid, liquid and gas. Using your knowledge in kinetic theory, explain how are particles in every state of matter cited above at room temperature**?**
24. **Using kinetic theory , explain what happens:**
    a) When a solid is heated and directly evaporates without melting
    b) When a gas is cooled until it becomes liquid.

25. The melting and boiling points of six substances are given below:

Substance	Melting point/°C	Boiling point/°C
Nitrogen	-210	-196
Carbon disulphide	-112	46
Ammonia	-78	-34
Bromine	-7	59
Phosphorus	44	280
Mercury (II) chloride	276	302

(Room temperature is taken as 20°C.)

    a) What do you understand by melting and boiling point?

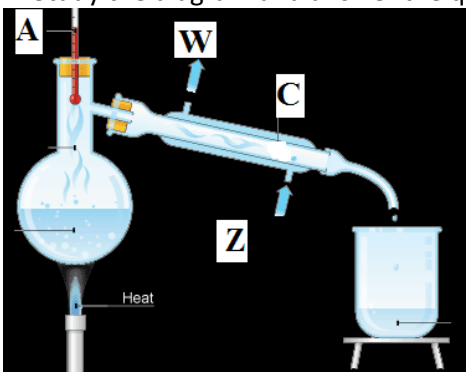
    b) Which element is a solid at room temperature?

    c) Which compound is a liquid at room temperature?

    d) Which compound is a gas at room temperature?

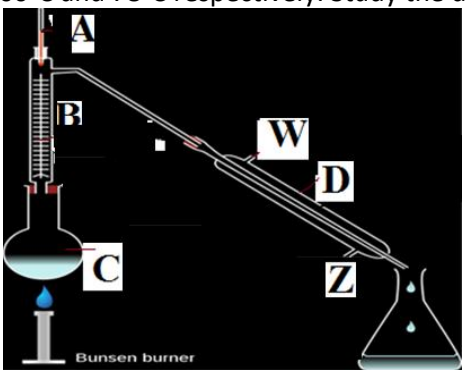
26. The following methods are commonly used to separate mixtures: Filtration, sublimation, Chromatography, evaporation, simple distillation, Centrifuging and Fractional distillation. State the easiest method one could use to obtain:
    a) Gasoline from petroleum
    b) Dyes from ink
    c) Butter from sour milk
    d) Sand from a mixture of sand and water
    e) Common salt from a mixture of solid ammonium chloride and common salt
    f) Sodium chloride from a solution of sodium chloride
    g) Water from a mixture of water and sugar
    h) Water and oil
    i) Ethanol and water
    j) Sand and salts
    k) Iron and sulphur
    l) Components of flower extracts
    m) Copper (II) sulphate crystal from copper (II) sulphate solution
    n) Clean water from muddy water
    o) Clean water from its mixture with chalk

27. Given the apparatus set up below to separate two components X and Y. X being a solid dissolved in liquid Y. Study the diagram and answer the questions that follow.



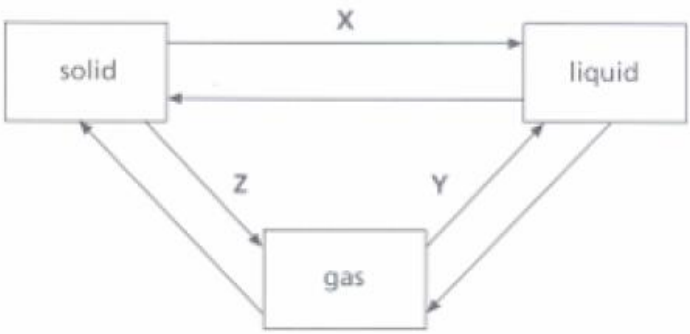
a) What is the method for separation of mixtures does the diagram show?
b) State the directions of water indicated by W and Z
c) Name every part of the diagram from A to C
d) Give one pair of other components that can be separated through this method.

28. Given the apparatus set up below to separate two miscible liquids X and Y of similar boiling points 100^0C and 78^0C respectively. Study the diagram and answer the questions that follow.



e) Which type of method for mixture separation does the diagram show?
f) State the direction of water indicated by W and Z
g) Name each part of the diagram from A to D
h) Give one pair of other two liquids that can be separated through this method.

29. It is possible to interchange the states of matter. The following diagram shows these changes



a) Name the changes X, Y and Z.

b) Which of the changes X, Y or Z is achieved by a decrease in temperature

30. Look at the following diagram and answer the question asked about it.

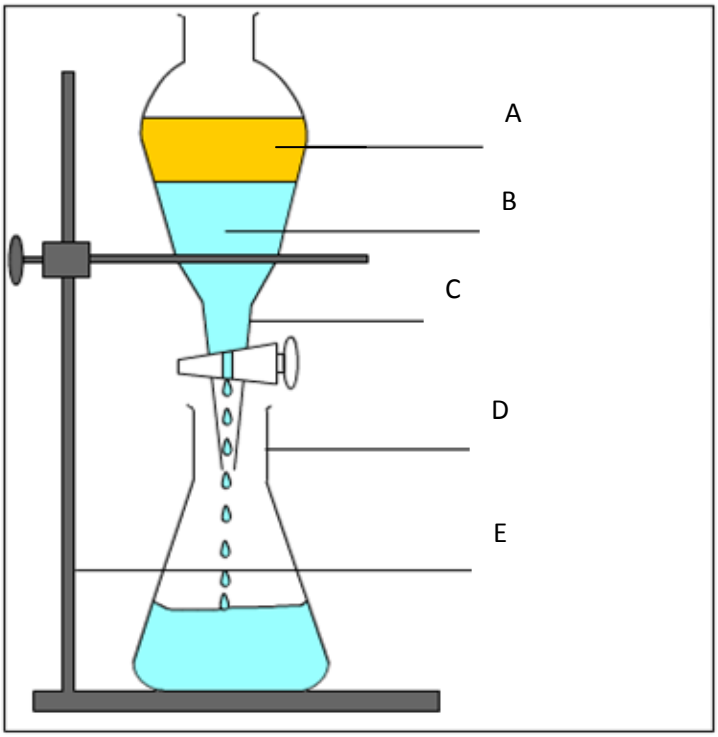


Diagram of Apparatus

a) Which type of method for mixture separation does the diagram show?

b) Name each part of the diagram: A, B, C,D and E

c) State to which type of mixture the method above in (1) can be applied.