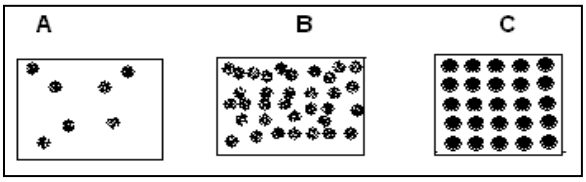
Exercise

Properties of matter

Part One :Multiple Choice Questions

Circle The Correct Answer

1. The three most common states of matter are
   - **A.** Gel, liquid and gas
   - **B.** Solid, liquid and gas
   - **C.** Solid, gel and liquid
   - **D.** Solid, gel and gas
2. The three states of matter depend on
   - **A.** temperature
   - **B.** force
   - **C.** potential energy
   - **D.** biomass
3. All matters are made up of
   - **A.** atoms and ions
   - **B.** atoms and molecules
   - **C.** atoms
   - **D.** molecules
4. Which of the following have the strongest intermolecular forces of attraction?
   - **A.** Gas
   - **B.** Solid
   - **C.** Liquid
   - **D.** Gel
5. Gases have
   - **A.** Fixed shape and volume
   - **B.** Variable shape and volume
   - **C.** Variable shape but fixed volume
   - **D.** Fixed shape but variable volume
6. Considering kinetic theory of particles, solids have
   - **A.** Variable shape but fixed volume
   - **B.** Fixed shape and volume
   - **C.** Variable shape and volume
   - **D.** Fixed shape but variable volume
7. Which one of the diagram below show how the particles are arranged in solids?



8. The Brownian Motion was discovered by the scientist
   - **A.** Albert Brown
   - **B.** John Brown
   - **C.** Robert Brown
   - **D.** Isaac Brown
9. The movement of particles in liquids and gases is observed as
   - **A.** Bruneian motion
   - **B.** Brownian motion
   - **C.** blackian motion
   - **D.** randomium motion
10. The Brownian motion of smoke particles is caused by
    - **A.** Collision between air molecules
    - **B.** Collision between particles of smoke and air
    - **C.** Collision between smoke particles
    - **D.** Convection current in the air
11. In solid the particles are
    - **A.** closely packed
    - **B.** free to move
    - **C.** irregularly packed

Instructor:-

Exercise

Properties of matter

D. far apart

12. Liquids have
- **A.** Fixed shape and volume
- **B.** Variable shape and volume
- **C.** Variable shape but fixed volume
- **D.** Fixed shape but variable volume

13. The term fluids is used for
- **A.** liquids only
- **B.** gases only
- **C.** liquids and gases both
- **D.** gels only

14. Why are liquids and gases termed as fluids? Because
- **A.** they can flow
- **B.** they have irregular shape
- **C.** they have randomly moving particles
- **D.** they are compressible

15. A change of state from liquid to solid is called
- **A.** Melting
- **B.** Boiling
- **C.** Freezing
- **D.** Condensing

16. Which one of the following happens when an object is heated
- **A.** Change of state
- **B.** Change of colour
- **C.** Cooling effect
- **D.** Vibrating less

17. When ice changes from a solid to a liquid (water), what change of state is occurring?
- **A.** Freezing
- **B.** Sublimation
- **C.** Melting
- **D.** Condensation

18. The temperature at which substances start to melt is called
- **A.** Melting point
- **B.** Boiling point
- **C.** Freezing point
- **D.** Condensation point

19. Diffusion occurs more quickly in a gas than liquid because
- **A.** Molecules in a gas have more freely than those of a liquid
- **B.** molecules in a liquid
- **C.** Gas molecules are a larger
- **D.** Gas molecules are more randomly
- **E.** All the correct

20. The motion of the molecules of two gases causes them to mix, what is the mixing called
- **A.** Conduction
- **B.** Convection
- **C.** Diffusion
- **D.** Evaporation

21. Which of the following is not true
- **A.** The molecules of solid vibrate about fixed position
- **B.** The molecules in liquid are arranged in a regular pattern
- **C.** The molecules in gas exert negligible small force on each other during collision
- **D.** The molecules of gas all occupy all the space available

Exercise

Properties of matter

22. The force between water molecules is called
- **A.** Adhesion
- **B.** Surface tension
- **C.** Cohesion
- **D.** Capillarity

23. Water drops from dripping tape are round this is because
- **A.** The molecules are round
- **B.** Water crystals are round
- **C.** Molecular attraction cause the round shape
- **D.** Atmospheric pressure cause drip to be a round

24. Evaporation, melting, freezing and condensation are collectively called
- **A.** Change of state
- **B.** Change of mass
- **C.** Change of temperature
- **D.** Change of length

25. When substance changes directly from a solid to a gas, what change of state is occurring?
- **A.** Deposition
- **B.** Sublimation
- **C.** Evaporation
- **D.** Condensation

26. If a stick of butter is placed in the microwave for 1 minute, what change of state will occur?
- **A.** Freezing
- **B.** Condensation
- **C.** Sublimation
- **D.** Melting

27. Ability of material to resist breaking stretched, compressed or sheared is known as
- **A.** Stiffness
- **B.** Strength
- **C.** Elasticity
- **D.** Brittleness

28. The change of state from **gas** to **liquid** is called
- **A.** Evaporation
- **B.** Condensation
- **C.** Freezing
- **D.** Melting

29. Ability of material to regain their original shape being deform is called
- **A.** Stiffness
- **B.** Strength
- **C.** Brittleness
- **D.** Elasticity

30. Which of the following statements <u>NOT</u> fit the kinetic theory of matter?
- **A.** Matter is made up of small particles called molecules.
- **B.** The molecules are in constant motion or vibration
- **C.** The molecules of solid expand when heated
- **D.** The higher the temperature, the faster the molecules move or vibrate.

31. Which statement about the particle theory of matter is true?

A. When the solid melts its particles no longer exists
B. The particles in a liquid has more kinetic energy than the particles of the gas
C. The particles that make up matter are too small to see without microscope
D. A solid has a fixed shape because force between its particles is strong

32. The molecules in solid:-
A. Moving closer together
B. Moving fast in all directions, hitting each other and sides of the solid
C. Not moving, vibrate and have strong attractive forces.
D. Vibrate and passing each other

33. Paraffin moves up the wick of a candle by the process:
A. Osmosis
B. Surface tension
C. Capillarity
D. Transportation

34. When water spreads on a glass plate, the forces between its molecules and glass molecules are due to:
A. Surface tension
B. Cohesion
C. Adhesion
D. Capillarity attraction

35. Which of the following is a property of adhesion?
A. Repulsion between unlike molecules
B. Attraction between unlike molecules
C. Repulsion between like molecules
D. Attraction between unlike molecules

36. Water molecules attract other types of molecules. The attraction between different types of molecules is referred to as;
A. Adhesion
B. Cohesion
C. Hydrophilic
D. Hydrophobic

37. Cohesion is the force of attraction between particles close to each other in:
A. The same substance
B. Substances that dissolve in water
C. Different substances

38. Adhesion is the force of attraction between particles close to each other in:
A. Different substances
B. Same substances
C. Substances that dissolve in water

39. If three thin open tubes with different diameters were stood

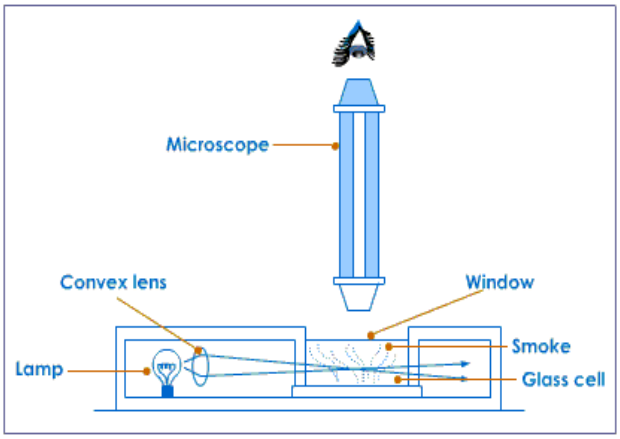
upright in a container of water, the water level would be:

A. The same in all three tubes
B. Highest in the thinnest tube
C. Highest in the thickest tube

40. The movement of water from the tree roots up to the leaves is by:

A. Capillary action
B. Surface tension
C. Precipitation

41. The diagram shown below shows for practical demonstration of the constant randomly motion of the particles of matter.



This experiment is called:-

A. Diffusion
B. Osmosis
C. Brownian motion
D. Mixture method

42. The melting point of ice is

A. 14 degrees Celsius
B. 32 degrees Celsius
C. 100 degrees Celsius
D. 0 degrees Celsius

43. What is the boiling point of water?

A. 0 degree Celsius
B. 100 degree Celsius
C. 100 degree Fahrenheit
D. 100 Kelvin

44. Which phase change occurs at lowest temperature?

A. Melting
B. Evaporation
C. Ionization
D. Vaporization

45. The freezing point of a substance is the same as its:-

A. Boiling point
B. Condensation point
C. Evaporation point
D. Melting point

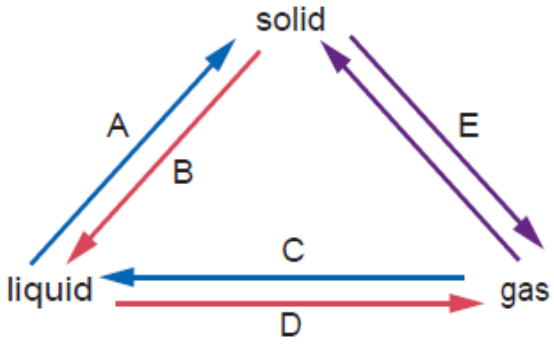
46. What happens to particles of matter during freezing?

A. The particles move faster and spread apart.
B. The particles slow down and get closer together.
C. The particles move faster and get closer together.
D. The particles slow down and spread out.

47. During which change of state do the atoms become less ordered (they speed up and move further apart from one another)?

A. Freezing
B. condensation
C. boiling
D. stretching

48. The figure below shows the three states of matte, where arrows indicates the change of state that letter **A** represents is



A. Melting
B. Solidification
C. Boiling
D. Condensation
E. Freezing

49. The forces of attraction between two unlike molecules are called
A. Cohesive forces
B. Capillary forces
C. Adhesive force forces
D. Surface tension

50. Why water strides stay on a top the liquid without sinking as shown in the diagram?

This is because
A. Adhesive forces between the molecules of water.
B. Adhesive and cohesive forces between molecules of water.
C. Surface tension of water
D. Capillarity

51. Which of the following is an evidence of the random motion of the particles of matter?
A. Diffusion
B. Brownian motion
C. Capillary action
D. A and B

52. Which one of the following statements is **NOT** true?
A. The molecules in a solid vibrate about a fixed position.
B. The molecules in a liquid are arranged in a regular pattern.
C. The molecules in a gas exert negligibly small forces on each other, except during collisions.
D. The densities of most liquids are about 1000 times greater than those of gases because liquid molecules are much closer together than gas molecules.
E. The molecules of a gas occupy all the space available.

Exercise

Properties of matter

Part Two

Structured Questions

1. Define the following terms

A. Matter

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B. Mass

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C. Volume

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2. State kinetic theory of matter

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3. Particles in both a solid and a liquid are close-packed but the particles of move in different ways

State how the particles move

a) In a solid

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b) In a liquid

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c) In a gas

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d) State one difference in the arrangement of the particles in a gas compared to those in solids and liquids

4. Draw a line from each change of state to the correct name

Change of satate	Name
Solid to liquid	Evaporation
Liquid to gas	Melting
Gas to liquid	Condensation
Liquid to solid	Freezing

Exercise

Properties of matter

5. Complete the table below about the properties of states of matter

High, vibrate about fixed position, freely around one another, fast, strong, far apart, regular, close contact, random, very low, compressible.

Fill the blank spaces of the table choosing words in the above box.

	SOLIDS	LIQUIDS	GASES
Kinetic energy		**Low**	
Motion of particles			**Ceaseless and random**
Rate of diffusion	**Very low**	**Slow**	
Attractive forces		**Fairly weak**	**Negligible**
Spacing of particles		**Little further apart**	
Arrangement of particles			**Random**
Volume	**Fixed**		**Fixed**
Compressibility	**Virtual incompressible**	**Incompressible**	
Density	**High**	**High**	

6. Use kinetic theory of matter to explain each of the following

a) Solids are often very dense and almost incompressible

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b) Solids expand when they are heated

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c) Liquid and gases can flow, but solids cannot flow.

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d) The color ink drop spreads through a beaker of water

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e) A gas will occupy all the space which is available to it.

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f) State **two** evidences that you can prove that the particles matter are travelling in straight line

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2. ……

7. **a)** Explain difference between cohesive adhesive force

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b) Define what the surface tension of water is

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c) Determine three useful examples of surface tension

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ii. ……
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iii. ……
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d) State **two** the two factors that affect the surface tension

1. ……

2. ……

e) State **two** ways of reducing the surface tension

1. ……
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2. ……
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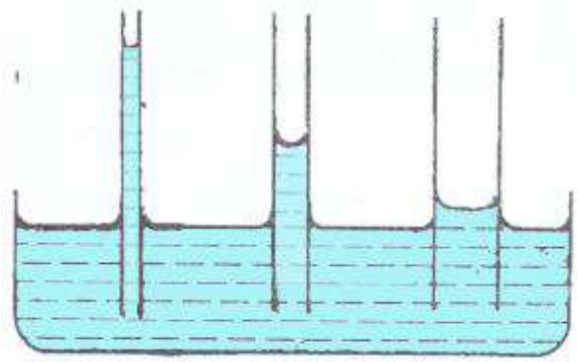
8. Figure below shows narrow tubes of different bore dipped in a beaker of water



a) On the diagram draw the shape of meniscus on each tube

b) Explain why water rises up in a narrow capillary tubes

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Exercise

c) Explain what is mean by capillarity

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d) State **THREE** useful examples of capillarity action

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3. ……
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e) Compare evaporation and boiling by filling the following

Boiling	Evaporation

9.

(a) Define the following terms

(i) Elasticity

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(ii) Ductility

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(iii) Brittleness

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(iv) Hardness

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(b) Explain the difference between

(a) Plastic and elastic materials

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(b) Stiffness and strength

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END { **E – – – – – – – – – – – –→ Effort**
N – – – – – – – – – – – –→ Never
D – – – – – – – – – – – –→ Die

Best regards,
YOUR SUCCESS IS OUR GOAL.

Properties of matter

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