

WORKSHEET

I. DEFINE THE FOLLOWING:

1. Intermolecular space
2. Intermolecular force
3. Force of cohesion
4. Force of adhesion
5. Latent heat of fusion
6. Latent heat of vaporisation
7. Mass
8. Volume
9. Density
10. Moment of force
11. Pressure
12. Kinetic energy
13. Potential energy
14. Energy

II. SHORT ANSWERS

1. What does the following statement mean
 - a. The specific latent heat of fusion of ice is $336 \times 10^3 \text{ J/kg}$.
 - b. The specific latent heat of vaporisation is $2260 \times 10^3 \text{ J/kg}$.
2. State the laws of floatation.
3. What are the factors affecting torque.
4. What are the factors affecting solid pressure.
5. What are the factors affecting liquid pressure.
6. What are the conditions for work done.
7. Compare work and power.
8. Complete the tabular column

	Solid	Liquid	Gas
Speed of Sound			
Heat Transfer			

III. LONG ANSWERS:

1. Explain kinetic theory of matter
2. With a neat diagram explain the change of state of matter with energy absorption or liberation.
3. What are the factors affecting density.
4. State the properties of liquid pressure
5. State the properties of atmospheric pressure.
6. With a neat diagram explain the construction and working of barometer.
7. With a neat diagram explain the construction and working of manometer.
8. Explain the classification of mechanical energy.
9. Complete the tabular column:

	Name of the Process	Heat absorbed or liberated	Examples
Solid to Liquid			
Liquid to Gas			
Solid to Gas			
Gas to Liquid			
Liquid to Solid			
Gas to Solid			

10. What are the energy transformations that occurs in the following

- a. Photosynthesis
- b. Charging a battery
- c. Using a battery
- d. Loudspeaker
- e. Generator
- f. Motor
- g. Tube light
- h. Electromagnet
- i. Room heaters
- j. Automobile engine

IV. WRITE THE FORMULA AND DERIVE THE UNIT FOR THE FOLLOWING

1. Density.
2. Relative density.
3. Torque.
4. Solid Pressure.
5. Liquid pressure.
6. Work done.
7. Potential energy.
8. Kinetic energy.

V. APPLICATION BASED QUESTIONS

1. Why does a ship float in water.
2. Why does ice berg float in sea.
3. Why does hydrogen balloon float in air.
4. Why walls of the dams are made thicker in the bottom.
5. Why submarines are built with thick walls.
6. Why bottle is kept at a height during blood transfusion.
7. How ink gets filled in the fountain pen.
8. How the medicine gets filled in the syringe.

VI. NUMERICAL

1. Complete the tabular column.

	Mass	Volume	Density in g/cm^3	Density in Kg/m^3	Relative Density	Float or sink in water
Object 1	500 g	50 m^3				
Object 2	4 kg		160 g/cm^3			

Object 3		160 cm ³		16 Kg/m ³		
Object 4	5 kg	500 cm ³				

- A cubic wooden block, having length 1 cm each, exerts a pressure of 26000 Pa. If the cubic block is cut into half to form two rectangular blocks, what would be the pressure exerted by each of the blocks? Given that the force applied be the same.
- An empty relative density bottle weighs 20 g. When completely filled with water it weighs 25 g. when filled with unknown liquid it weighs 88 g. Calculate the relative density and find the unknown liquid.

4. Complete the tabular column

	Mass	Displacement	Work done
Object 1	5 kg	500 cm	
Object 2	8000 g		160 J
Object 3		4 m	140 J
Object 4		600 cm	180 J

5. Complete the tabular column

	Mass	Velocity	Kinetic energy
Object 1	500 g	5 m/s	
Object 2		36 km/hr	500 J
Object 3	5000 g		1000 J

6. Complete the tabular column

	Mass	Height	Potential energy
Object 1	60 kg	600 cm	
Object 2	6000 g		300 J
Object 3		500 cm	500 J

7. Calculate power in the following cases

- Force = 50 N; Displacement = 300 cm; time = 2 minutes
- Force = 20 N; velocity = 20 m/s
- Mass = 4 kg; displacement = 500 cm; gravity = 10 m/s²; Time = 2 min

8. A body of mass 'm' moving with velocity 'v' has Kinetic Energy 500 J. How will the Kinetic Energy change if

- Mass is halved and velocity is doubled
- Mass is doubled and velocity is halved.

9. A body of mass 'm' kept at height 'h' has Potential Energy 400 J. How will the Potential Energy change if

- a. Mass is halved and height is increased 4 times.
 - b. Mass is doubled and height is doubled.
10. Two objects of mass 200 g and 300 g are kept at heights 500 cm and 200 cm respectively. Find the ratio of the energy possessed by the objects.
11. A body having mass 'm' is moving at a velocity 'v'. if its velocity is increased 4 times and mass is halved then what will be its kinetic energy.
12. Two forces $F_1 = 30\text{ N}$ and $F_2 = 20\text{ N}$ is applied at two-point $d_1 = 4\text{ m}$ and $d_2 = 3\text{ m}$ respectively from the pivot. Which force will cause greater moment.
13. A stone of mass 4 kg displaced 200 ml of water when it was immersed in water. Calculate the density and relative density of the stone.

VII. CHOOSE THE BEST ANSWER

1. The ability of a body to do work is called
 - a. Energy
 - b. Power
 - c. Force
 - d. Work
2. Work is always done in the..... Of the application of force
 - a. Opposite direction
 - b. Same direction
 - c. Perpendicular direction
 - d. None of these
3. Which of the following unit is used to measure the energy in food industry
 - a. Electron volt
 - b. calories
 - c. Watt
 - d. Joules
4. Water in a tap from overhead tank flows due topotential energy
 - a. Gravitational
 - b. Electrical
 - c. Thermal
 - d. None of these
5. The S.I unit of power is
 - a. Watt
 - b. Joule
 - c. Pascal
 - d. Newton
6. The energy possessed in the food is measured using
 - a. Calories
 - b. Joule
 - c. Kwh
 - d. eV
7. The product of force and velocity is
 - a. Work
 - b. Energy
 - c. Power
 - d. Pressure
8. If the depth of the water increases, the pressure
 - a. Increase
 - b. Remains constant
 - c. Decrease
 - d. Becomes zero
9. The unit of pressure used for meteorological purpose is
 - a. Torr
 - b. Bar
 - c. Pascal
 - d. None of these
10. Which of the following device is used to measure the liquid pressure
 - a. Manometer
 - b. Thermometer
 - c. Barometer
 - d. Altimeter
11. Gas pressure exerted is directly proportional to
 - a. Mass
 - b. Volume
 - c. Density
 - d. None of these
12. The height of the mercury column at sea level is
 - a. 76 cm
 - b. 76 mm
 - c. 76 m
 - d. 760 cm
13. When the surface area is quadrupled the pressure
 - a. Doubles
 - b. Halves
 - c. Remains same
 - d. none of these
14. According to which law or principle, "The pressure is exerted at one place of an enclosed liquid, is transmitted equally in all directions".
 - a. Newton's law
 - b. Archimedes principle
 - c. Pascal's law
 - d. Floatation law
15. If the density of an object is more than that of the liquid in which it is immersed, then the object will
 - a. Float
 - b. Remains suspended
 - c. Sink
 - d. None of these
16. Density of water is measured at temperature
 - a. 100°C
 - b. 0°C
 - c. 4°C
 - d. None of these
17. Which of the following is the derived physical quantity
 - a. Density
 - b. Mass
 - c. Length
 - d. Height
18. Eureka Can is based on.....principle
 - a. Galileo
 - b. Archimedes
 - c. Newton
 - d. None of these
19. The substance will sink in water if

- | | | | | |
|--|-----------|-----------|------------|------------------|
| | a. R.D >1 | b. R.D <1 | c. R.D = 1 | d. None of these |
|--|-----------|-----------|------------|------------------|
20. The pycnometer is the device used to measure the
- | | | | | |
|--|-------------|----------------------|----------------------|------------------|
| | a. Pressure | b. Density of liquid | c. R.D of the liquid | d. none of these |
|--|-------------|----------------------|----------------------|------------------|
21. Solid carbon dioxide is an example for
- | | | | | |
|--|-------------|------------|---------------|----------------|
| | a. Freezing | b. Melting | c. Deposition | d. sublimation |
|--|-------------|------------|---------------|----------------|
22. Latent heat of fusion results in
- | | | | | |
|--|---------------------|-----------------------|---------------|------------------|
| | a. Melting of solid | b. freezing of liquid | c. both a & b | d. None of these |
|--|---------------------|-----------------------|---------------|------------------|
23. If intermolecular space increases, then intermolecular force
- | | | | | |
|--|--------------|-------------|---------------------|------------------|
| | a. Decreases | b. increase | c. remains the same | d. none of these |
|--|--------------|-------------|---------------------|------------------|
24. Solids that can sublimate are
- | | | | | |
|--|------------|-----------|--------|--------------|
| | a. Camphor | b. Iodine | c. Ice | d. both a &b |
|--|------------|-----------|--------|--------------|
25. The mode of heat transfer that occurs in solid is
- | | | | | |
|--|---------------|---------------|--------------|------------------|
| | a. Conduction | b. convection | c. radiation | d. all the above |
|--|---------------|---------------|--------------|------------------|
26. Sound travels fastest in which medium
- | | | | | |
|--|----------|-----------|--------|------------------|
| | a. Solid | b. Liquid | c. Gas | d. None of these |
|--|----------|-----------|--------|------------------|
27. When a matter is heated, the Kinetic Energy of the particles
- | | | | | |
|--|--------------|--------------|---------------------|------------------|
| | a. Increases | b. Decreases | c. remains the same | d. None of these |
|--|--------------|--------------|---------------------|------------------|
28. 1 Newton = dyne
- | | | | | |
|--|-------|-----------|-----------|-------|
| | a. 10 | b. 10^5 | c. 10^7 | d. 20 |
|--|-------|-----------|-----------|-------|
29. 1 Bar = Pascal
- | | | | | |
|--|-------|-----------|-----------|-------|
| | a. 10 | b. 10^5 | c. 10^7 | d. 20 |
|--|-------|-----------|-----------|-------|
30. One joule of work done in one second is
- | | | | | |
|--|-------------|-----------|-------------|-----------|
| | a. 1 newton | b. 1 watt | c. 1 pascal | d.1 meter |
|--|-------------|-----------|-------------|-----------|