

Unit
1

Physical Quantities and Measurement

Important short Question.

Q1:- Define S.I units?

A world-wide system of measurements is known as international system of unit S.I. In S.I unit of seven base quantities are meter, kilogramme, second, ampere, and mole etc.

Q2:- Define Significant figures.

All the accurately known digits and the first doubtful digit in an expression are called significant figures.

Q3. What are physical quantities?

A measurable quantity is called a physical quantity.

Q4. What are base and derived quantities?

Base quantities are defined independently. Seven quantities are selected as base quantities. These are length, time, mass, electric current, temperature, intensity of light and the amount of substance.

Derived Quantities.

The quantities which are expressed in term of base quantities are called derived quantities.

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Q5:- Write the name of any three measurement instruments?

- i) The metre rule ii) The measuring tape
iii) Screw gauge iv) vernier calliper.

Q6:- Estimate your age in seconds?

My age is 17 year age.

1 year = 365 days

1 day = 24 hours

1 hr = 60 min

1 min = 60 sec

Total second in one year = $365 \times 24 \times 60 \times 60$ sec
= 31536000 sec

Total second in 17 year = 17×31536000

My age in second = 536112000 sec.

Q7:- What is least count? What is least count of i) vernier calliper 2) screw gauge.

The minimum value of any quantity which can be measured accurately by an instrument is called least count of that instrument.

Vernier calliper least count:

Least count of vernier = Smallest reading on main scale
calliper

no. of division on vernier scale

$$= \frac{1 \text{ mm}}{10 \text{ division}} = 0.1 \text{ mm} \Rightarrow \text{LC} = 0.1 \text{ mm} = 0.01 \text{ cm}$$

Screw gauge:-

Least count = pitch of the screw gauge

$$= \frac{\text{no. of divisions on circular scale}}{100} = \frac{1 \text{ mm}}{100} = 0.01 \text{ mm} = 0.001 \text{ cm}$$

Q8:- Scientific Notation.

In scientific notation a number is expressed as some power of ten multiplied by a number between 1 and 10.

Example:-

A number 62750 can be expressed as 62.75×10^3 or 6.275×10^4 or 0.6275×10^5 .

Q9. prefixes:-

The terms used internationally before a unit and stand for the multiples or sub-multiple of that unit are called prefixes.

Example:- kilo, mega, milli, micro etc.

Q10:- Define physics and important branches of physics.

Mechanics:-

It is the study of motion of objects its causes and effects.

Heat:-

It deals with the nature of heat modes of transfer and effects of heat.

Sound.

it deals with the physical aspects of sound waves their production properties and application.

Light.

it is the study of physical aspects of light its properties working and use of optical instruments.

Electricity and Magnetism.

it is the study of the charges at rest and motion their effects and their relationship with magnetism.

Atomic physics.

it is the study of the structure and properties of atoms.

Nuclear physics.

It deals with the properties and behaviour of nuclei and the particles within the nuclei.

Plasma physics.

it is the study of production properties of the ionic state of matter - the fourth state of matter.

Geophysics.

It is the study of the internal structure of the Earth.

Q1:- Define pitch of screw?

The distance moved by thimble of screw gauge by giving one complete rotation is called pitch of screw.
pitch of screw = 1mm.

Q12. Write down two rules to find the significant digits in a measurement.

*:- Digits other than zero are always significant
e.g. 27 has 2 significant digits.

*:- Zeros between significant digits are also significant e.g. 2705 has 4 significant digits.

*:- Final zero or zero after decimal are significant e.g. 275.00 has 5 significant digits.

Q13. What role SI units have played in the development of science?

SI unit have brought consistency and uniformity in calculation and results.

S.I unit are very helpful to exchange scientific and technical information at the international level.

Q14. What is meant by vernier constant?

The least count of vernier callipers is known as vernier constant.

It is ratio between smallest reading on main scale to the total divisions on vernier scale.

OR

The difference between one small division on main scale and one vernier scale division.

Formula.

$$\text{Vernier constant} = \frac{\text{Smallest reading on main scale}}{\text{Total no. of divisions on vernier}}$$

Kinematics:-

Important Short Question.

Q1: Convert 50 kmh^{-1} in to ms^{-1}
 we know that. GMP

$$50 \text{ kmh}^{-1} = \frac{50 \times 1000 \text{ m}}{3600 \text{ sec}} \Rightarrow 13.88 \text{ ms}^{-1}$$

Now (ex) $50 \text{ kmh}^{-1} = 50 \times \frac{1000}{3600} = 13.88 \text{ ms}^{-1}$ Ans

→ convert 1 ms^{-1} into kmh^{-1}
 $\frac{1 \text{ m}}{1 \text{ sec}} = \frac{3600}{1000} = 3.6 \text{ kmh}^{-1}$ Ans

Q2. Explain LIDAR gun. GMP

A LiDAR gun is light detection and ranging speed gun. it uses the time taken by laser pulse to make a series of measurements of vehicle's distance from the gun. The data is used to calculate vehicle's speed.

Q3. Distance and Displacement.

i) Total length of a path between two points is called Distance.

ii) Distance is a scalar quantity.

i) The shortest distance between two points is called displacement.

ii) Displacement is a vector quantity.

Q4. Linear and Random motion.

Motion of a body along a straight line is called linear motion.

Examples:- Freely falling objects.

.. Random motion.

The irregular or zigzag motion of a body is called random motion.

Example:- Random motion of gas molecules.

Q5:- Explain translatory motion and give examples of various type of translatory motion.

The motion in which a body moves along a line straight or curved without any rotation is called translatory motion.

Type of translatory motion.

i) Circular motion ii) Linear motion

iii) Random motion.

Circular motion.

The motion of an object in a circular path is known as circular motion.

Example:- A car moving along a circular track

Linear motion.

Straight line motion of a body is known as its linear motion.

Example:- Rocket flying straight in air is linear motion.

Random motion.

The disordered or irregular motion of an object is called random motion. Example.

Motion of insects and birds is random

Q6. Define rest and motion?

Rest.

A body is said to be at rest, if it does not change its position with respect to its surroundings.

Motion.

A body is said to be in motion, if it changes its position with respect to its surroundings.

Q7. What are scalar and vector quantities?

Scalar

A scalar quantity is described completely by its magnitude only.

Example:-

Scalars are mass, length, time, speed, volume, work and energy.

Vector

A vector quantity is described completely by magnitude and direction.

Example.

Vectors are velocity, displacement, force, momentum, torque etc.

Q8. Speed and uniform speed:

The distance covered by an object in unit time is called its speed.

Formula.

$$\text{Speed} = \frac{\text{distance covered}}{\text{time taken}}$$

$$\text{Distance} = \text{speed} \times \text{time}$$
$$S = vT$$

Unit:-

S.I unit of speed ms^{-1}

Uniform speed.

A body has uniform speed if it covers equal distance in equal intervals of time. However, short the interval may be.

Q9. Define velocity and its formula?

The rate of displacement of a body is called velocity.

Formula.

$$\text{velocity} = \frac{\text{displacement}}{\text{time taken}}$$

$$v = \frac{d}{t} \Rightarrow d = vt$$

Unit:- S.I unit of velocity ms^{-1}

Q10. Write First equation of motion.

Speed-time graph for the motion of a body is shown figure 2.26. Slope of line AB gives the acceleration of a body.

$$\text{Slope of line AB} = a = \frac{BC}{AC}$$

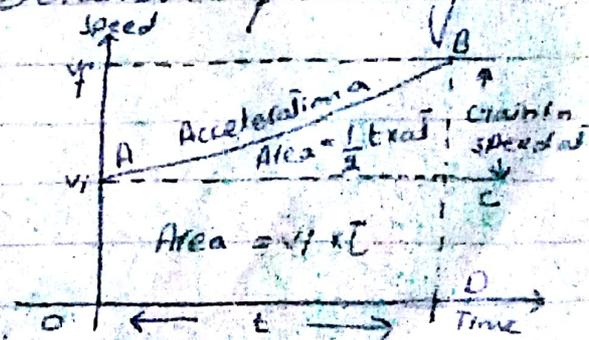
$$= \frac{BD - CD}{OD}$$

$$BD = v_f, \quad CD = v_i \quad \text{and} \quad OD = t$$

$$\text{Hence } a = \frac{v_f - v_i}{t}$$

$$\text{or } v_f - v_i = at$$

$$v_f = v_i + at$$



Q11:- Define acceleration and retardation.

Acceleration is defined as the rate of change of velocity of a body.

Formula:-
acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$

acceleration = $\frac{\text{final velocity} - \text{initial velocity}}{\text{time taken}}$

$$a = \frac{v_f - v_i}{t}$$

Unit:- S.I unit of acceleration ms^{-2}

Retardation.

Acceleration of a body is negative if velocity of the body decrease. The direction of negative acceleration is opposite to the direction in which body is moving. Negative acceleration is also called deceleration or retardation.

Q12. What is gravitational acceleration?

The acceleration of freely falling bodies is called gravitational acceleration. It is denoted by g . on the surface of the Earth its value is approximately 10ms^{-2} . For bodies falling down freely g is positive and negative for bodies moving up.

unit

3.

Dynamics.

Important Short Question.

Q1. What is Atwood machine? write its purpose?

An arrangement of two bodies connected to a string or passing over a frictionless pulley and both objects move vertically is called as Atwood machine.

purpose:- It is used to find the acceleration due to gravity.
$$g = \frac{m_1 + m_2}{m_1 - m_2} a$$

Q2. State Newton third law of motion?

Newton's third law of motion states that to every action there is equal and opposite reaction.

Example:- The weight is action and tension in suspension string is its reaction.

Q3. What is the difference between sliding friction and rolling friction.

A force between the sliding objects which opposes the relative motion between them is called sliding friction.

Rolling friction is the force of friction between a rolling body and the surface over which it rolls.

Q4. When a gun is fired it recoils. why?

A gun recoils is due to the gases created by the explosion of the bullet's casing which are used to propel the bullet from the gun because the gases are

released so quickly so in reaction the gun recoils to compensate. So a gun recoils to conserve momentum.

Q5. Describe ways to reduce friction.

Method of reducing friction.

- i) Using grease or any other lubricant.
- ii) Using smoother surfaces.
- iii) Using rollers wheels or ball bearings.
- iv) Objects like car and planes are modeled with streamlined shapes.
- v) Using fluids of lower viscosity.

Q6. Why rolling friction is less than sliding friction?

In rolling friction the area of contact between two objects is comparatively less than that in case of sliding as in rolling one object just rolls over other. Hence area of contact is less so, force of rolling friction is less than sliding friction.

Q7. Why does passenger move outward when a bus takes a turn?

When a bus takes a sharp turn passengers fall in the outward direction. It is due to inertia that they want to continue their motion in a straight line and thus fall outwards.

Q8. Define Centripetal force and centrifugal force.

The force which keeps the body to move in a circular path is called the centripetal force.

Formula:-

$$F_c = \frac{mv^2}{r}$$

Centrifugal force.

Centripetal reaction that pulls the string outward is sometimes called the centrifugal force.

Q9. Define friction?

The force that opposes the motion of moving objects is called friction.

Q10. Define momentum and its formula?

Momentum of a body is the quantity of motion possessed by the body. Momentum of a body is equal to the product of its mass and velocity.

Formula :- $p = mv$

Unit :- S.I unit of momentum Ns or $kgm\ s^{-1}$

Q11. Define force?

A force is a push or pull. It moves or tends to move stops or tends to stop

The motion of a body. The force can also change the direction of motion of a body.

Unit:- Its S.I unit is kgm s^{-2}

Q12. Define Inertia?

Inertia of a body is its property due to which it resists any change in its state of rest or motion.

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Turning Effect of Forces.

Important Short Question.

Q1. Define like parallel force and unlike parallel force?

Like parallel force are the force that are parallel to each other and have the same direction.

Unlike parallel force.

Unlike parallel force are the force that are parallel but have directions opposite to each other.

Q2. Define Head to tail rule?

The vectors are added graphically such that tail of 2nd vector coincides with head of 1st vector and so on. The resultant of all vector is obtained by considering the tail of 1st vector to head of last vector.

Q3. Define Torque and formula?

The turning effect of a force is called torque or moment of force.

Symbol: τ

Formula: $\tau = r \times F$

Unit: = Nm

Q4. Define centre of mass and centre of gravity?

Centre of mass of a system is such a point where an applied force causes the system to move without rotation.

Centre of Gravity:-

The centre of gravity of a body is defined as a point where the whole weight of the body appears to act vertically downward.

Q5 Define axis of rotation.

The straight line passing through the body about which a body can rotate is called axis of rotation.

Example:- Turning pencil in a sharpener.

Q6. What is principle of moments?

A body is balanced if the sum of clockwise moments acting on the body is equal to the sum of anticlockwise moments acting on it.

$$\sum \text{clockwise moments} = \sum \text{anticlockwise moments.}$$

Q7. Why the height of vehicles is kept as low as possible?

Vehicles are made heavy at the bottom

and their height is kept to be minimum. This lowers their centre of gravity and helps to increase their stability. As to make them stable their centre of mass must be kept as low as possible.

Q8. Think of a body which is at rest but not in equilibrium.

A body thrown upward is at rest just for a while at highest point. But force of gravity still acts on it to produce acceleration. Thus the body is at rest but not in equilibrium.

Q9. Define stable, unstable and ~~also~~ neutral equilibrium.

Stable Equilibrium. Equilibrium is considered stable if after a slight tilt, it returns to its previous position.

Example:- A book lying on a table.

Unstable Equilibrium. If a body does not return to its previous position when set free after a slight tilt then the equilibrium is unstable.

Example:- A pencil standing on its point.

Neutral Equilibrium.

If a body remains in its new position when disturbed from its previous position it is said to be in

neutral equilibrium

Example:-

Rolling Ball.

Q10. Define Couple?

It is product of two unlike parallel forces which is equal in magnitude but opposite in direction.

Example:- Car steering.

Q11. Define Equilibrium?

A body is said to be in equilibrium if no net force acts on it.

Q12. Define Addition of force?

A resultant force is a single force that has the same effect as the combined effect of all the forces to be added.

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Gravitation

Important Short Question.

Q1. What is meant by the force of gravitation?

The force due to which every body of the universe attracts every other body is called force of gravitation.

Formula:-

$$F = \frac{Gm_1m_2}{r^2}$$

Q2. What is a field force?

The force acting on the body whether the body is in contact with it or not is called field force.

Example:- Gravitational force.

Q3. Define gravitational field strength.

In the gravitational field of the earth the gravitational force per unit mass is called the gravitational field strength of the earth.

value:- At any place its value is 10 N kg^{-1}

Q4. Define law of gravitation?

The force of attraction between two objects is directly proportional to

The product of their masses and inversely proportional to the square of the distance between them.

Formula:-

$$F = G \frac{m_1 m_2}{r^2}$$

Q5. Why does the value of g vary from place to place?

$$g_h = \frac{GM_e}{(R+h)^2}$$

The value of g is inversely proportional to the square of the radius of the earth.

But it does not remain constant and decrease with altitude that's why the value of g varies from place to place.

Q6. Explain how the value of g varies with altitude?

value of gravitational acceleration is determined by following formula.

$$g_h = \frac{GM_e}{(R+h)^2}$$

So, g is inversely proportional to $(R+h)^2$. $g \propto \frac{1}{(R+h)^2}$ means that with increasing altitude value of g decrease.

Q7. What are artificial satellites?

Scientists have sent many object

and this navigation system provides the exact position of anybody in air or any place on earth and this system consist of 24 satellites.

Q11. Differentiate between artificial and natural satellite.

Artificial
Scientists have sent many object in the space. Some of these object revolve around the earth. These are called the artificial satellite.

Example. geostationary satellites.

Natural.
Natural satellites are objects such as the moon in space that orbit around another body.

Technically all planets in the solar system are natural satellites of the sun.

Q12. Define orbital velocity?

It is defined the velocity which is needed to a satellite to move in an orbit is called orbital velocity. It value is 8 km/s

Formula:-
$$v_o = \sqrt{gh(R+h)}$$

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Work and Energy.

Important Short Question.

Q1. Define work What is its S.I unit?

Work is said to be done when force acting on a body displaces it in the direction of the force.

Formula:-

$$\text{Work} = \text{Force} \times \text{distance}$$

$$W = FS$$

Unit:-

S.I unit of work joule (J) or Nm.

Q2. Define Energy give two type of mechanical energy.

A body possesses energy if it is capable to do work.

Type of mechanical energy.

Mechanical energy has two following types.

- i) kinetic energy ii) potential energy.

Q3. Define K.E and derive its relation.

Energy possessed by a body due to its motion is called kinetic energy.

Derivation.

If ball move with initial velocity v_i after covering some distance. it stop and its v_f is zero. During this it does work against force of friction $F = ma$

$$v_f^2 - v_i^2 = 2as$$

$$\text{As } (a = -\frac{F}{m})$$

$$0 - v_i^2 = 2 \left(-\frac{F}{m} \right) (s)$$

$$-v_i^2 = -\frac{2Fs}{m}$$

m we know that.

$$W = Fs = K \cdot E$$

$$v_i^2 = \frac{2K \cdot E}{m}$$

$$K \cdot E = \frac{1}{2} m v^2 \Rightarrow v_i^2 = \frac{2K \cdot E}{m}$$

Q4. Define potential energy and derive its relation.

Energy possessed by a body due to its position is called potential energy.

$$P.E = mgh.$$

Derivation.

$$P.E = \text{work}$$

$$P.E = F \cdot d = (mg)(h)$$

$$P.E = mgh.$$

Q5. Why fossils fuels are called non-renewable form of energy?

The fossils fuels take millions of years for their formation. So these are known as non-renewable resources.

Q6. Define power?

Power is defined as the rate of doing work.

Formula:- $P = \frac{W}{T}$

Unit.

The S.I unit of power is watt (W)

Q7:- What is meant by the efficiency of a system?

Efficiency of a system is the ratio of required form of energy obtained from a system as output to the total energy given to it as input.

Formula.

$$\text{Efficiency} = \frac{\text{output}}{\text{input}} \times 100$$

Q8. Define Watt?

The power of a body is one watt if it does work at the rate of 1 joule per second 1 J s^{-1}

$$1 \text{ watt} = \frac{1 \text{ J}}{1 \text{ sec}}$$

Q9. How can you find the efficiency of a system?

Efficiency of a system can be determined by following formula.

$$\text{Efficiency} = \frac{\text{required form of output}}{\text{total input energy}}$$

$$\% \text{ Efficiency} = \frac{\text{required form of output} \times 100}{\text{total input}}$$

Q10. A man has pulled a cart through 35m applying a force of 300N. Find the work done by the man.

Given Data.

$$S = 35\text{m}$$

$$F = 300\text{N}$$

To Find.

$$\text{Work} = W = ?$$

Solution.

$$W = FS$$

$$= 300 \times 35 \Rightarrow W = 10500\text{J}$$

Q11. Calculate the power of a pump which can lift 200kg of water through a height of 6m in 10 seconds.

Given Data.

$$m = 200\text{kg}$$

$$h = 6\text{m}$$

$$t = 10\text{s}$$

To Find.

$$P = ?$$

Solution.

$$P = \frac{W}{T} = \frac{mgh}{T}$$

$$P = \frac{200 \times 10 \times 6}{10} \Rightarrow P = 1200\text{ watt}$$

Q12. What is the definition of joule? Work will be one joule if a force of one newton acts on a body and

The body covers a distance of one metre in the direction of the force.

$$1J = 1N \times 1m.$$

Q13. Is it possible to have 100% efficient system?

people have tried to design a working system that would be 100% efficient. But practically such a system does not exist. Every system meets energy losses due to friction that causes heat noise etc. These are not useful form of energy and go waste.

Q14. Define Magma?

Magma is mixture of molten or semi-molten rock materials and solids that is found beneath the surface of earth and is expected to exist on other terrestrial.

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7 Properties of Matter:

Important Short Question.

Q1: How kinetic molecular model of matter is helpful in differentiating various states of matter?

Kinetic molecular model is used to explain three states of matter solid liquid and gas.

Solid:

In solid molecules are very close to one another they possess greater attractive forces.

Liquids:

Distance between molecules is greater as compared to solids.

Gases:

In gases distance between molecule is too much.

Q2. Define density?

Density of a substance is defined as the mass per unit volume.

Formula:

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

$$d = \frac{m}{V}$$

Unit:

The S.I unit of density is kilogram per cubic meter kgm^{-3}

Q3. Does there exist a fourth state of matter? What is that?

yes, there exist a fourth state of matter that is called plasma.

At very high temperature the matter assumes the state of ions and electrons this is called plasma.

Q4. Define the term pressure?

The force acting normally on unit area at the surface of a body is called pressure.

Formula.

$$P = \frac{F}{A}$$

Unit.

S.I unit of pressure (Nm^{-2}) or (Pa)

Q5. What is a barometer?

The instrument that measures atmospheric pressure is called barometer. one of the simple barometer is mercury barometer.

Q6. State Pascal's law?

pressure applied at any point of a liquid enclosed in a container is transmitted

without loss to all other parts of liquid.

Q7. What is meant by elasticity?

Elasticity is the property of matter by virtue of which matter resists any force which tries to change its length, shape or volume.

Q8. State Archimedes principle?

When an object is whole or partially immersed in a liquid an upthrust force acts on it equal to the weight of the liquid displaced. This is known as Archimedes principle.

Q9. Define strain write its unit?

A stress can produce a change in shape, length or volume of an object. If a stress produces a change in length then the ratio of change in length to original length is called tensile strain.

Formula.

$$\text{Tensile strain} = \frac{\text{change in length}}{\text{original length}}$$

Unit.

It is ratio between similar quantities, so it has no unit.

Q10. Explain about the young's modulus?

Tensile stress divided by strain is called young's modulus.
Formula.

$$Y = \frac{F \times L}{A \times \Delta L}$$

Unit.

$$Nm^{-2}$$

Q11. What is Hooke's law? What is meant by elastic limit?

The strain produced in a body by the stress applied to it is directly proportional to the stress within the elastic limit of the body is called Hooke's law.

Stress or Strain
Elastic limit:

Elastic limit can be defined as a limit within which a body recovers its original length, volume or shape after the deforming force is removed.

Q12. Why does a piece of stone sink in water but a ship with a huge weight floats?

Ships and boats float on water.

It is because the weight of an equal volume of water is greater than the weight of ships and boats. Ships have less density and large volume.

A stone sinks in water. It is because the weight of an equal volume of water is smaller than the weight of stone. Stone has high density and small volume.

Q13. What is upthrust?

The fluid liquids exert force in the upward direction when some objects are immersed in them. This is called upward thrust.

Q14. Define principle of floatation?

The weight of fluid displaced is equal to weight of floating object inside liquid. Then object will not sink and keep floating. It is called principle of floatation.

Q15. Explain how a submarine moves up the water surface and down into water?

If the submarine is not filled with sea water then its weight is less than upward thrust. So that it floats on surface of sea water. But when it is filled with water. Then its weight becomes larger as compared with upward thrust of water. Then it sinks in to water.

8. Thermal properties of Matter.

Important Short Question.

Q1. Why does heat flow from hot body to cold body?

Heat flows from hot body to cold body to attain the condition of thermal equilibrium.

Q2. Define term heat and temperature?

Heat is the form of energy that is transferred from one body to another in thermal contact with each other as a result of the difference of temperature between them.

Temperature:

Temperature of a body is the degree of hotness or coldness of the body.

Q3. What is thermometer? Why mercury is preferred as a thermometric substance?

A thermometer is a device which is used to measure the temperature of a body.

Mercury is preferred as a thermometric substance due to following properties.

Mercury as thermometric substance.

It is easily visible.

It has uniform thermal expansion.

It has a small specific heat capacity.

Q4. Explain the volumetric thermal expansion?

It is usually expressed as a fractional change in volume per unit temperature change.

$$V = V_0 (1 + \beta \Delta T)$$

Q5. Describe the bimetal strip?

In bimetal strip two strip of different metals are joined together like strip of brass expand more than iron. The unequal expansion causes bending of strip which is called bimetal strip.

Uses of bimetal strip:

- i) To measure temperature.
- ii) To make thermostat
- iii) In electric iron.

Q6. Convert 300K into Celsius temperature

$$T_K = 300K$$

$$T_K = T^{\circ}C + 273$$

$$T^{\circ}C = T_K - 273$$

$$T^{\circ}C = 300 - 273$$

$$T^{\circ}C = 27^{\circ}C$$

Q7. How many scales are there for temperature?

There are three scales for temperature.

- i) Celsius scale
- ii) Kelvin scale
- iii) Fahrenheit scale.

Q8. Define heat capacity?

The amount of heat absorbed by a substance to increase its temperature one kelvin is called heat capacity.
Unit.

Its S.I unit is $\text{J kg}^{-1} \text{K}^{-1}$.

Q9. What is specific heat capacity?

It is defined as the amount of heat required to raise the temperature of 1kg mass of that substance through 1 kelvin.

Unit.

S.I unit of specific heat is $\text{J kg}^{-1} \text{K}^{-1}$

Q10. Why the gaps are left in railway tracks?

Gaps are left in railway tracks to compensate thermal expansion during hot season. otherwise train will derail and cause serious accident.

Q11. Define specific heat. How would you find the specific heat of a solid?

The specific heat of a substance is the amount of heat required to raise the temperature of 1kg mass of that substance through 1K. Specific heat of any substance can be found out by using following formula.

$$C = \frac{\Delta Q}{m \Delta T}$$

C is the specific heat capacity.

ΔQ is the amount of heat absorbed by the body.

m = is the mass of the body.

ΔT is the change of temperature.

Q12. Define and explain latent heat of fusion.?

Latent heat of fusion is the amount of thermal energy which must be absorbed for 1 mole of substance to change its state from solid to liquid with out change in temperature is called latent heat of fusion.

Formula:-

$$H_f = \frac{\Delta Q_f}{m}$$

Q13. Define latent heat of vaporization:

The quantity of heat that changes unit mass of a liquid completely in to gas at its boiling point with out any change in its temperature is called its latent heat of vaporization. denoted by H_v .

Formula.

$$H_v = \Delta Q_v / m$$

unit. J kg^{-1}

Q14. What is meant by evaporation?
on what factors the evaporation
of a liquid depends?

Evaporation is escaping out of fast moving water molecules from the surface of a liquid without heating.

Factors:-

- i) Temperature
- ii) Surface Area
- iii) wind
- iv) Nature of liquid.

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Unit
9.

Transfer of Heat:

Important Short Question.

Q1. What is meant by convection current?

Hot air rises up creating gap which is filled by colder air. This air also gets warm and rises up. That is how convection currents are produced.

Q2. How does heat reach us from the sun?

Heat reaches us from the sun through radiation process.

Q3. What is green house effect?

Green house effect is the result of infrared light not being able to transmit back through the atmosphere into space after it has been radiated to the earth from the sun.

Q4. Explain the impact of green house effect in global warming.

During the recent years the percentage of carbon dioxide has been increased considerably. This has caused an increase in the average temperature of the Earth by trapping more heat due to greenhouse effect. This phenomenon is known as global warming.

Q5. Narrate the factors on which heat flows depends?

The rate of heat flow depends on these factors.

- i) Cross sectional area.
- ii) Distance between cold and hot objects.
- iii) Difference of temperature.

Q6. Name various faces of Leslie cube?

A Leslie cube has four different faces.

- i) A shining silvety surface.
- ii) A dull black surface.
- iii) A white surface.
- iv) A colored surface.

Q7. Define Conduction?

The mode of transfer of heat by vibrating atoms and free electrons in solid from hot to cold parts of a body is called conduction of heat.

Example.

Sauce-pans are made of metal for quick heat transfer.

Q8. What is convection of heat?

Transfer of heat by actual movement of molecules from hot place to a cold place is known as convection.

Example:-

Balloons inflated with hot air rise up

Q9. What is Thermal conductivity of a substance?

Thermal Conductivity of a substance can be defined as the rate of flow of heat across the opposite faces of a cube of a substance maintained at a temperature difference of one kelvin is called the thermal conductivity of a substance.

Formula.

$$k = \frac{Q}{t} = \frac{L}{A \Delta T}$$

Unit.

$$W m^{-1} K^{-1}$$

Q10. Define sea breeze?

On a hot day temperature of the land increase more quickly than sea. As specific heat of land is much smaller as compared to water. The air above land gets hot and rises up. The cold air from sea begins to move towards land it is called sea breeze.

Q11. What does glider remain in air?

Glider use upward movement of hot air currents. Air currents help them to stay in air for a long period.

Q12. Write the uses of conductors and non-conductors.

Good conductor are used for quick transfer of heat.

Example.

pressure cooker, refrigerator are made of metals.

Use of non-conductor.

Hot water tanks are insulated by plastic or foam lagging.

Q13. What is gliding?

Gliding is a process in which pilot use the air currents to fly in the air with out any driven power and these air currents which is hot air is called thermal currents and the pilot glider remains in air with the help of these thermal currents.

* Best of luck *