Physics

MEASUREMENT & UNITS

- What is the unit of potential difference?
  ✓ Volt
- Knot is used for measuring
  ✓ Speed of ships
- Unit of work
  ✓ Joule
- Unit of viscosity of fluid
  ✓ Poise
- Decibel is the unit for measuring the intensity of
  ✓ Sound
- What is the S.I. unit of pressure?
  ✓ Pascal
- One angstrom is equal to
  ✓ $10^{-10}$ m

- How many Pascal is the atmospheric pressure?
  ✓ $10^5$ Pascal
- What is the S.I. unit of magnetic field strength?
  ✓ Ampere per metre
- Which is the smallest unit of distance used in Nuclear Physics?
  ✓ Fermi
- The unit used to measure radio activity
  ✓ Becquerel
- What is the unit of frequency?
  ✓ Hertz
- The power of the Engine is calculated by
  ✓ Horse Power (One Horse Power = 746 watt)
- The unit of Capacitance
  ✓ Farad
- The unit of Inductance
  ✓ Henry
- The unit of atmospheric pressure
  ✓ Bar (One Bar = 76 cm of Hg)
- Unit of force
  ✓ Newton
- Unit of Electric charge
  ✓ Coulomb
- Unit of Electric resistance
  ✓ Ohm

THE BASE UNITS OF SI UNITS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Symbol</th>
</tr>
</thead>
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<tr>
<td>1. Length</td>
<td>Metre</td>
<td>m</td>
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<tr>
<td>2. Mass</td>
<td>Kilogram</td>
<td>Kg</td>
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<tr>
<td>3. Time</td>
<td>Second</td>
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<tr>
<td>4. Electric current</td>
<td>Ampere</td>
<td>A</td>
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<tr>
<td>5. Temperature</td>
<td>Kelvin</td>
<td>K</td>
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<tr>
<td>6. Luminous intensity</td>
<td>Candela</td>
<td>cd</td>
</tr>
<tr>
<td>7. Amount of substance</td>
<td>mole</td>
<td>mol</td>
</tr>
</tbody>
</table>

- What is the use of Barometer?
  ✓ To measure the atmospheric pressure
Physics

- The unit which is used to calculate the distance between the Galaxy
  ✓ parsec (Parallactic second)
- The largest unit of distance
  ✓ parsec (1 parsec= 3×10¹³ km)
- Electric power is measured by
  ✓ Watt
- SI unit of temperature
  ✓ Kelvin
- Unit of luminous intensity is
  ✓ Candela
- The SI unit of wavelength of light is
  ✓ Angstrom
- The unit used to measure the depth of the sea is
  ✓ Fathom
  One fathom = 6 feet
- The unit of distance in astronomy is
  ✓ Light year
- The Unit of power of lens is
  ✓ Dioptre

INSTRUMENTS AND ITS USES

- Which instrument converts mechanical energy into electrical energy?
  ✓ Dynamo
- Which instrument converts light energy into electric energy?
  ✓ Photo electric cell
- Which instrument used to convert A.C. current to D.C. current?
  ✓ Rectifier
- Which is the instrument employed to change the voltage in an electric circuit?
  ✓ Transformer
- What is the use of Altimeter?
  ✓ To measure the altitude
- What is the use of Ammeter?
  ✓ To measure the flow of electric current in a circuit
- What is the use of Anemometer?
  ✓ To measure the force or speed of the wind
- What is the use of Electroscope?
  ✓ To measure the electrostatic charge
- What is the use of Calorimeter?
  ✓ To measure the amount of heat
- What is the use of Speedometer?
  ✓ To indicate the speed of a vehicle
- What is the use of Fathometer?
  ✓ To measure the depth of water (1 fathom = 6 ft)
- What is the purpose of Mariner’s compass?
  ✓ To find out the direction of the ship in the sea
- What is the use of Steroscope?
  ✓ To see the photos taken by two cameras placed at two different angles
- What is the use of Hygrometer?
  ✓ To measure the humidity of atmosphere.
- What is the use of Galvanometer?
  ✓ To measure electric currents
- What is the use of Microscope?
  ✓ To magnify tiny objects
- What is Lactometer?
  ✓ device used to measure the relative density of milk to determine its purity
- The device that uses radio waves to detect the position of objects such as Aeroplanes, missiles etc.
  ✓ Radar
- What is Pyrometer?
  ✓ Used to record high temperature from a great distance
- What is Hydrophone?
  ✓ It is used for recording sound inside water
- What is an electric oscillator?
  ✓ It converts Direct Current into Alternating Current
- What is cyclotron?
  ✓ It is a device for producing high energy sub-atomic particles
- What is Geiger - Muller counter?
  ✓ It is used for detecting and measuring radio active radiation
- What is a nuclear reactor?
  ✓ It is the Central component of a nuclear power station, which generates nuclear energy under controlled conditions.
• What is a hydrometer?
  ✓ It is used for measuring the density of liquids directly.
• What is venturimeter?
  ✓ It is used for measuring flow of liquids
• What is Radar?
  ✓ Radar is Radio Detection and Ranging

WORK, POWER AND ENERGY
• Work
  ✓ When a force acting on a body produces displacement, it is called
• Power
  ✓ Rate of doing work is called
  1 horse power = 746 watt
• Energy
  ✓ Energy by virtue of which a body can do mechanical work is called
  ✓ Mechanical Energy
• Which are the two forms of mechanical energy
  ✓ Kinetic energy & Potential energy
• The energy possessed by a body because of its velocity is
  ✓ Kinetic energy
• Kinetic energy is proportional to
  ✓ mass of the body & square of its velocity
• The energy possessed by a body because of its position or change in shape is called
  ✓ Potential energy
• What happens to the potential energy when the height of a body from the ground is doubled?
  ✓ Potential energy is also doubled
• The energy possessed by the water collected in the reservoir of a dam
  ✓ potential energy
• If the velocity of a body is increased, its kinetic energy increases
• The SI Unit of
  ✓ Work - joule
  ✓ power - watt
  ✓ energy - joule
• Energy of one form can be changed to another form. The process is called
  ✓ Energy Transformation
• What is the potential energy of a body on the ground?
  ✓ Zero
• Which is the main source of energy to earth?
  ✓ Sun
• In the sun, which is converted into energy?
  ✓ Matter
• What is called a device which reduces human effort?
  ✓ Machine
• What is called the ratio of the resistance to the effort when they balance each other?
  ✓ Mechanical advantage of a simple machine
• What is called ‘lever’?
  ✓ A rigid rod which can rotate about a point fulcrum is called a lever.
• What is first order lever?
  ✓ In first order lever Fulcrum is between the resistance and effort.
• Write some examples of the first order levers:
  ✓ Balance, scissors, spanner
• What is second order lever?
  ✓ In second order lever resistance lies between the fulcrum and effort
• Write examples of second order lever
  ✓ Nut cracker, Wheel barrow, Bottle opener
• Who proved the existence of seven colours in sunlight?
  ✓ Sir Isaac Newton
• Who developed the law of attraction or repulsion of electric charges?
  ✓ Coulomb
- What do you mean by the third order lever?
  ✓ The effort is in between the resistance and the fulcrum
- Write examples of third order lever
  ✓ Fire tongs, forceps, ice tongs
- What changes is done in a dynamo?
  ✓ Mechanical energy is converted into electrical energy.
- What is the unit of work in the C.G.S. system?
  ✓ Erg
- When a body falls freely work is done by
  ✓ Gravitational force
- One watt is equal to
  ✓ One Joule / second
- "State the law of conservation of energy":
  ✓ Energy can neither be created nor destroyed although it can be transformed from one form to another
- When is work always done on a body?
  ✓ When it experience an increase in energy through a mechanical influence
- The unit of Speed and Velocity is
  ✓ m/sec
- The unit of acceleration
  ✓ metre/sec²

**MOTION & FORCES**

- A quantity which possess both magnitude and direction is known as
  ✓ Vector quantity
- Examples of vector quantities are
  ✓ (1) velocity
  ✓ (2) acceleration
  ✓ (3) force
  ✓ (4) displacement
- "If there is no external force, a body at rest continues to be at rest and a body in motion continues to move with uniform velocity". This law is known as
  ✓ The Law of Inertia
- Who proposed the Law of Inertia?
  ✓ Galileo
- Who proposed the Laws of Motion?
  ✓ Isaac Newton
- The distance travelled in unit time is called
  ✓ speed
- The distance travelled in unit time in a specific direction is called
  ✓ velocity
- Impulse of force
  ✓ is the product of the force and the time during which the force acts on the body.
- The force acting for a very short time
  ✓ impulsive force
- The rate of change of velocity is called
  ✓ acceleration
- The kind of force that opposes relative motion is known as
  ✓ Friction
- The rocket lift - off is based on which law?
  ✓ Newton’s 3rd Law of Motion
- The minimum speed which a space craft needs to escape earths gravitational force is known as
  ✓ escape speed (escape velocity is wrong because speed is a scalar quantity)
- The escape speed is
  ✓ 11.2 km/s or 7 miles/sec.
- The SI unit of force is
  ✓ Newton
- Which force is needed to change the direction of a moving body?
  ✓ External unbalanced
- The momentum of a body depends on what?
  ✓ Its mass and velocity
- Why does the cotton wick in an oil-filled lamp keep on burning?
  ✓ In the cotton wick there are innumerable capillaries in which oil continues to rise.
The upward force which liquid act on bodies immersed in it is called
✓ **buoyant force**

How does the rise of temperature affect surface tension?
✓ **The surface tension decreases with rise of temperature.**

An iron needle slowly placed on the surface of water floats on it because
✓ **of its surface tension**

A drop of oil is placed on the surface of water. What will happen to it?
✓ **It will spread as a thin layer**

Soap helps in cleaning the clothes because:
✓ **It reduces the surface tension of solution**

If the diameter of capillary be doubled, the rise of water in capillary will be
✓ **Half**

When the distance between two bodies increases, the force between them will
✓ **Decrease**

The acceleration due to gravity is maximum at the
✓ **Poles**

The gravitational force on a body placed at the centre of the earth will be
✓ **Zero**

The freely falling body appears to be weightless. Why?
✓ **The force exerted by the earth is being used to accelerate the body.**

What is the force that opposes the relative motion of two bodies that are in contact?
✓ **Friction**

What is the ability of fluids to offer resistance to flow?
✓ **Viscosity**

The frictional force offered by a liquid is called
✓ **Viscous force**

Examples of viscous liquids
✓ **Glycerine, Castor oil, Coal tar and honey**

Force of attraction between molecules of the same kind is called
✓ **Force of cohesion**

Force of attraction between molecules of different kinds is called
✓ **Force of adhesion**

The internal force developed within a body when forces are applied on it is called
✓ **Elastic force**

Is steel or rubber more elastic?
✓ **Steel is much more elastic than rubber**

The force between a magnet and a magnetic material or between two magnets is called
✓ **Magnetic force**

The path of the projectile is called
✓ **trajectory**

The trajectory of a projectile moving under the influence of a constant acceleration is a
✓ **Parabola**

The projectile has maximum range when the angle of projection is
✓ **45°**

**NEWTON’S LAW OF MOTION**

Why does an athlete run some distance before taking a long jump?
✓ **By running the athlete gives himself larger inertia of motion**

What is Newton’s third law of motion?
✓ **To every action there is an equal and opposite reaction**

The “theory of relativity” was explained by
✓ **Albert Einstein**

Albert Einstein got the Nobel Prize for Physics in 1921 for explaining
✓ **Photo Electric Effect**

The incapability of a body to change by itself its state of rest or its state of uniform motion along a straight line
✓ **Inertia**

According to Newton’s third law every force is accompanied by an equal and opposite force. Then how can a movement take place?
✓ **Action and reaction act on different bodies**
- Swimming is possible on account of
  - Third law of motion
- When we jump out of a boat standing in water it moves
  - Backward
- A man is at rest in the middle of a pond on perfectly smooth ice. He can get himself to the shore by making use of Newton’s
  - Third law
- A cannon after firing recoils due to
  - Newton’s third law of motion
- Newton’s second law gives the measure of
  - Force

**PROPERTIES OF MATTER**

- The ability of a solid to return to its original shape, on the removal of the external force is called
  - Elasticity
- If a solid does not regain its original shape and size, when the deforming force is removed, it is called
  - Plastic
- Substances which can be elastically stretched to large values of strain are called
  - elastomers
- An elastomer in human body
  - Aorta
- The mass per unit volume of a substance is known as its
  - density
- The ship entering from a river in to sea rises up a little. Why ?
  - The density of a sea water is higher than that of river water
- An iron nail floats on mercury but sinks in water, why ?
  - The specific density of iron is lower than that of mercury and higher that that of water
  - Clouds float in the atmosphere because of their low........
  - density
- Whenever a body is immersed partially or completely in a fluid, it experiences an upward force. This is called,
  - buoyancy
- Icebergs float in sea water because the density of ice is
  - less than water
- The shape of rain drop is spherical due to
  - surface tension
- The force of attraction between the molecules of same material is called
  - Cohesive force
- The force of attraction between molecules of two different material is called
  - adhesive force
- The most characteristic property of liquid is
  - fluidity
- Newton/metre² is the unit of
  - pressure
- When salt is added to water, its surface tension
  - increases
- A body is floating in a liquid, the upthrust on the body is
  - equal to the weight displaced
- The sudden fall of atmospheric pressure predicts
  - storm
- Substances that reduces friction are called
  - lubricants

**HEAT & THERMODYNAMICS**

- The heat energy required to raise the temperature of one gram of water by 1°C is called one
  - calorie
- 1 calorie equals
  - 4.2 joules
- The quantity of heat required to raise the temperature of unit mass of a substance by 1°C is called its
  - specific heat
- Which liquid possess lowest specific heat ?
  - Mercury
- The temperature at which a solid substance gets converted into a liquid is called its
  - melting point (fusion point)
- The temperature at which a liquid gets converted into vapour state is called its
  - boiling point (vaporization point)
- The temperature at which the vapour gets converted into liquid is called
  - condensation point
- The temperature at which a liquid gets converted into a solid is called
  - freezing point
- The temperature which is equal in Fahrenheit Scale and Kelvin Scale
  - 574.25k = 574.25°F
The process in which a liquid changes into its vapour from its surface at a temperature below its boiling point is called evaporation.

Specific heat of water is 4200 J/Kg°C.

The coolant used in car radiator is water.

The transfer of heat between different parts of the body or from one body to another in contact with it is called conduction.

The process of transfer of heat from one point of a fluid to another part of a fluid by the movement of fluid itself is called convection.

Solar energy is received by the earth through which process?

In a pressure cooker, cooking is faster because of increased boiling point.

Absolute zero is the temperature at which molecular motion stops.

What do you mean by heat?

Heat is the agent which gives the sensation of hotness against coldness of the body.

What is meant by the temperature of a body?

It is the degree of hotness.

What is boiling point?

It is the temperature at which a liquid boils.

What is absolute zero?

It is the temperature at which the atoms of a substance become stationary (-273°C or 0°K).

An ordinary clock loses time in summer. This is because:

the length of pendulum increases and time period decreases

Sun rays reach on earth by radiation.

How does in a vacuum flask silverying reduce the loss of heat?

By radiation.

In the celsius temperature scale, what is the absolute zero of temperature?

-273.15°C

Why gas thermometers are more sensitive than liquid thermometers?

Because gases expand more than liquids.

What happens when a bimetallic strip is heated?

It will bend towards the metal with lower thermal expansion coefficient.

What is critical pressure?

It is the pressure required to liquify a gas at the critical temperature.

What is critical volume?

It is the volume occupied by one gram of gaseous substance at critical temperature and critical pressure.

Which is dew point?

Temperature at which given volume of air becomes just saturated with water vapour actually present in it.

Which produces more severe burns?

Steam.

Which factor is not needed to calculate heat lost or gain when there is no change of state?

Relative density.

What is the maximum density of water?

4°C

Transfer of heat takes place in liquids and gases mostly by convection.

The temperature which is equal in celsius scale and Farenheat scale

-40

The surface of water in a lake is just slowly being frozen. What is the temperature of water at the bottom of the lake?

4°C

Paraffin wax contracts on solidification. What is the melting point of wax?

Increase with pressure.
Alcohol is more volatile than water why?
✓ Because its boiling point is lower than water

The snow on the mountains does not melt all at once when it is heated by the sun. Why?
✓ Because it has a high latent heat of fusion

What is an ideal gas?
✓ Ideal gas is that which cannot be liquefied

The rate of transfer of heat is maximum in
✓ Radiation

What happens when we go up in the atmosphere?
✓ The pressure decreases

What is the lowest possible temperature?
✓ -273.16°C

What is humidity?
✓ The amount of water vapour in the air is termed as humidity

Which liquid is used in a thermometer?
✓ Mercury

OPTICS

The change in the direction of light as it passes from one medium to another is called
✓ refraction

The phenomenon of splitting of white light into seven colours is known as
✓ dispersion

Rainbow is formed by
✓ dispersion

When light is dispersed, the colour which is dispersed least is
✓ red

During dispersion, which colour shows maximum deviation?
✓ violet

When light falls on an object, a part of it is reflected in all directions. This process is called
✓ scattering

Light travels in a straight line. This property is known as
✓ rectilinear propagation of light

Materials which transmit almost all light rays through them are known as
✓ Transparent

Materials which transmit only a small part of the light rays are called
✓ Translucent

Materials which do not pass light through them are called
✓ Opaque

All colours are reflected by a
✓ white object

All colours are absorbed by a
✓ black object

We see lightning first and hear the thunder later because of
✓ velocity of light is greater than the velocity of sound

The primary colours are
✓ red, blue and green

Optical fibre works on the principle of
✓ total internal reflection

The velocity of light is maximum in
✓ vacuum

If a flower illuminated by white light reflects red and blue colours, the colour of the flower will be
✓ Magenta

The splitting up of a composite light into its component colours is called
✓ Dispersion

Dispersion occurs due to the difference in
✓ Wavelength

Any light which is composed of more than one colour is named as
✓ Composite light

Irregular and partial reflection of light during its passing through a medium is known as
✓ Scattering

The colour produced by the mixing of green and red is
✓ Yellow

A green leaf appears green because
✓ it reflects green colour

The beautiful colour of the soap foam and oil spread water is due to
✓ interference of light
How does a green leaf appear when it is viewed in a blue light?
- Dark

The colour used in signal lamp is
- Red

The colour of the head lamp in motor vehicles is
- Yellow

The heat carried in the solar rays is
- Infrared radiation

Sun burn is caused by which radiation?
- Ultraviolet

At a place when green, red and blue rays overlap, which colour will be seen?
- White

The distribution of the component colours of a composite light in the order of their wavelength or frequency as a result of dispersion is called
- Spectrum

When wavelength increases the rate of scattering
- Decreases

The property of certain material by virtue of which they absorb light of shorter wavelength and emit light of longer wavelength is called
- Fluorescence

Why can we see pictures with natural effect on a television?
- Due to persistence of vision

The colour of light obtained by mixing of any two primary colour of light is
- Secondary colour

Whose theory is called the Quantum theory of light?
- Max Planck’s theory

Why lightning is observed earlier than the thunder is heard?
- Because light travels faster than sound

A photoelectric cell converts
- Light energy into electric energy

Tyndall effect is due to
- Brownian Motion

If a surface absorbs all colours, it sees as
- Black

If a surface reflects all colours, it sees as
- White

Mirage is formed by
- Refraction and total internal reflection

Why is the sky and sea blue in colour?
- Due to the scattering of light

The formation of rainbow is due to which phenomenon of light?
- Refraction and dispersion

The colour seen on the outer edge of the rainbow is
- Red

Which colour is obtained when blue light and green light of the same intensities are mixed together?
- Cyan

The rays which appears to originate outside the earth
- the cosmic rays

In a doctor’s stethoscope the sound is intensified because of
- reflection of sound

When sunlight passes through atmosphere, the colour which scatters most is
- Violet

What is called interference?
- The modification of intensity in the region of superimposition.

Who suggested the wave theory of light?
- Christian Huygens

What is the name of the scientist who suggested that the velocity of light is maximum while propagating through vacuum?
- Foucault

The intensity of light depends on
- Amplitude

What is the reason for the formation if beautiful colours on a soap bubble or on a thin film of oil when spread over water?
- Interference

Who put forward the theory of electromagnetic radiation?
- Maxwell

Who discovered the photoelectric effect?
- Heinrich Hertz

What is the velocity of light in vacuum?
- $3 \times 10^8$ m/sec.

Bending or spreading of light around tiny opaque objects are called
- Diffraction

Which always reduces the velocity of electromagnetic waves?
- Medium

The unit of electromagnetic ra-
diants having a certain wavelength and a definite amount of energy is

✓ Photon

• What is directly proportional to the energy of a photon?
✓ Frequency

• Shadows have fuzzy uneven edges because of
✓ Diffraction

• Newton postulated his corpuscular theory of light on the basis of
✓ Rectilinear propagation of light

OPTICAL INSTRUMENTS

• How is the temperature of the sun measured?
✓ Pyrometer

• The magnifying power of a simple microscope can be increased if we use eye piece of
✓ Smaller focal length

• Large aperture of telescope are used for
✓ Greater resolution

• The image of a distant object as seen through an astronomical telescope is
✓ Inverted

CURRENT ELECTRICITY AND ELECTRONICS

• Flow of electrically charged particles is
✓ Electric current

• Charge flowing in one second
✓ Intensity of electric current

• Any substance which can offer resistance to the flow of electrons is called a
✓ Resistor

• Name the instrument that converts electrical signals into sound signals
✓ Loud Speaker

• Which instrument is used to change the direction of the flow of current
✓ Commutator

• What is the voltage in house supplyline?
✓ 230 volts (AC)

• Which is the principal element used in the production of solar cell?
✓ Silicon

• Which instrument converts electrical energy into light energy?
✓ Electric lamp

• Which instrument converts electrical energy into mechanical energy?
✓ Electric motor

• What is the unit used to measure electro motive force?
✓ Volt

• Which is the commercial unit of electric power?
✓ k.w.h

• Which instrument converts sound into electricity?
✓ Microphone

A man cannot see objects distinctly at a distance greater than 3 metres. He is suffering from
✓ Myopia
A high current produced in a low resistance circuit when two wires of main comes in contact with each other is called
✓ short circuiting

The frequency of household ac in India
✓ 50 hertz

Which part on the refrigerator controls the temperature level?
✓ Thermostat

Which battery is used in vehicles?
✓ Storage battery

Tangent galvanometer measures
✓ Current

The best instrument for the accurate measurement of the EMF of a cell is
✓ Potentiometer

The resistance of an ideal volt meter is
✓ Infinite

Short circuit means
✓ Direct flow of current between points of the same potentials

Best conductor of electricity is
✓ Silver

The principle on which a quartz crystal in a watch works
✓ Piezoelectricity

The thickness of certain ceramics changes when a voltage is applied across them this property is called
✓ Piezoelectricity

A small piece of wire made from an alloy of lead and tin is used to avoid overloading is
✓ Fuse

Nichrome is used in the manufacture of heating elements due to its
✓ High resistance

Device which converts mechanical energy into electrical energy
✓ Dynamo, It works on the principle of electro magnetic induction

Diode valves can be used as
✓ A rectifier

A device which can store considerable amount of charge is called
✓ Condenser or capacitor

The battery used in mobile phone?
✓ Lithium ion battery

Which cell is used in watch?
✓ Button cell (mercury cell)

Which is the weakest kind of bonding in solids?
✓ Vander Waal's

In good conductors of electricity, which type of bonding exists?
✓ Metallic

The conductivity of a intrinsic semiconductor at absolute zero is
✓ Zero

A transformer is used
✓ increase or decrease A.C. voltage

Any material that allows the passage of electricity and heat is called?
✓ Conductor

In artificial satellites, electric current is supplied by
✓ Solar cells

When a tape recorder operates
✓ Magnetic energy is converted into sound energy

Energy stored in the dry cells is
✓ Electrical

Father of electricity
✓ Michael Faraday

Potential difference in an electric circuit is measured by
✓ voltmeter

The current in an electrical circuit is measured by
✓ ammeter

The instrument used to detect the presence and direction of flow of current is called
✓ galvanometer

The property by which a conductor opposes the flow of electric current through it, is known as
✓ resistance

Electric current is the flow of
✓ electrons

The colour of earth wire is generally
✓ green

The filament of an electric bulb is made up of tungsten because it possess
✓ high melting point and resistance

Fuse wire is made up of
✓ Tin and Lead (solder)
- **When large current passes through the fuse wire, it melts away. Why?**
  - ✓ Due to the low melting point of tin - lead alloy
- **A device used instead of fuse?**
  - ✓ MCB (Miniature Circuit Breaker - It works on the Principle of magnetic effect of electric current)
- **What is the unit of intensity of Magnetic field?**
  - ✓ Tesla
- **Rubber, plastic, paper, glass, mica etc. are electrical ...............**
  - ✓ Insulators
- **Power of an ordinary torch cell is**
  - ✓ 1.5 volt
- **Magnetic effect of electric current was discovered by**
  - ✓ Oersted
- **The law of electromagnetic induction have been used in the construction of a**
  - ✓ Generator
- **Which instrument is used to measure magnetic field**
  - ✓ Fluxmeter
- **The device used for converting current from a lower voltage to a higher voltage is known as**
  - ✓ Transformer
- **What is electronics?**
  - ✓ Study of behaviour of electrons, their control & use
- **A material which allows only a feeble current to pass through it are called**
  - ✓ Semiconductors
- **The process of adding certain impurities in the crystal structure of a semiconductor so as to improve its conductivity is called**
  - ✓ Doping
- **The process of allowing electric current to flow in one direction only is**
  - ✓ Rectification
- **What is Detection?**
  - ✓ The process of extracting audio signals from the high frequency carrier waves is detection
- **Which device converts alternating current (AC) to direct current (DC)**
  - ✓ Rectifier
- **Which device convert DC to AC**
  - ✓ Electric oscillator
- **‘IC’ chip for computers are usually made of**
  - ✓ Silicon
- **The common constituent of transistor is**
  - ✓ Germanium
What is a sound?

- Sound is a form of energy which produces the sensation of hearing
- Sound waves are
  - Longitudinal waves
- The Unit of loudness is
  - Decibel
- The unit of intensity of light
  - Lambert
- Sounds with frequencies lower than the lowest limit of human hearing are called
  - Infrasonic waves
- Sounds with frequency higher than 20,000 Hz are known as
  - Ultrasonic waves
- The audible frequency of human ear
  - Between 20 hertz & 20,000 hertz
- Sounds are distinguished from each other by
  - Pitch (frequency), loudness (intensity) and quality
- Which waves are used in mobile phone?
  - Micro waves
- How is the sound produced?
  - By the vibration of material body
- What is frequency of sound?
  - The number of vibrations made by a body in one second is called its frequency
- Bat can fly at night because it produces
  - Ultrasonic sound
- The distance travelled by a wave during the time a particle of the medium makes one vibration is called
  - Wave length
- The distance travelled by a wave in one second
- Velocity of the wave
- What are sound waves?
  - Longitudinal waves
- A wave motion in which the particles of the medium vibrate parallel to the direction of propagation of wave is
  - Longitudinal
- The reflected sound is called
  - Echo
- The apparatus used for measuring the depth of the sea on the basis of echo is called
  - Sonar
- How is the sound produced when we speak?
  - By the vibration of vocal cords
- Which sound is produced by Galton whistle?
  - Ultrasonic
- When a harmonium is played, how is the sound produced?
  - By the vibration of the reeds
- What is required for the propagation of sound?
  - Medium
- When the frequency of the sound wave is increased, what happens to its wave length?
  - Decreased
- Which unit is used to measure the frequency of sound?
  - Hertz
- Normal level of sound is
  - 60-120 dB
- The maximum displacement of the particles of the medium from their equilibrium position?
  - Amplitude
- How is echo produced?
  - By the reflection of sound
- A wave in which particles of the medium vibrate perpendicular to the direction of propagation of the wave is
  - Transverse wave
- How is the speed of supersonic plane expressed?
  - Mach number
- Supersonic plane fly with the speed
  - Greater than the speed of sound
- When will the sound be painful to the ears?
  - When the sound is above 120 dB
- What are the essential characteristics of a wave?
  - Wave length, amplitude, frequency and velocity
- What is known as the study of sound?
  - Acoustics

**GALILEO GALILEI**
(1564 - 1642)

Born in Pisa, in Italy. He was a key figure in the scientific revolution in Europe. He invented the concept of acceleration; proposed the law of inertia and his discoveries in astronomy were equally revolutionary. Many regards Galileo as the "Father of Modern Science".
Which property of sound is affected by change in air temperature?
- Wavelength
- Amplitude

Why an astronaut can’t hear his companion at the surface of the moon?
- There is no medium for sound propagation

Ultrasonic waves are produced by
- Piezo electric effect

When mechanical waves have a frequency below the audible range it is known as
- Infrasonics

Which wave are used in sonography?
- Ultrasonic

When mechanical waves have a frequency above the audible range it is known as
- Ultrasonics

What is the velocity of sound in air?
- 300 m/s

In which medium the velocity of sound is maximum?
- Steel

What is the velocity of sound in vacuum (in m/s)?
- 0

With the rise in temperature, velocity of sound
- Increases

The velocity of sound in any gas depends upon its
- Density and Elasticity

The energy produced in a nuclear reactor is on account of
- Nuclear fission
- Carbon dating
- Technium
- Which element is usually used in radiation therapy?
- Cobalt - 60
- The first atomic reactor in India is
- Apsara (Maharashtra - Trombay)
- India’s first fast breeder reactor is at
- Kalpakkom in Tamilnadu
- In the interior of the sun, which reaction takes place?
- Nuclear fusion
- In the core of the sun, hydrogen nuclei fuse together to form which nuclei?
- Helium
- The radiation which is not affected by the magnetic field or electric field is
- Gamma rays

A metal which can absorb and stop radioactive radiations:
- Lead
- Increases by one
- Anti neutrino

Which is the element with the greatest half life period
- Uranium - 238

Artificial radioactivity was first discovered by
- Irene Joliot Curie and Frederic Joliot

The radiations which can penetrate most through substances are
- Gamma rays

The radio isotope formed in the atmosphere due to the action of cosmic rays is
- Carbon 14

An isotope which is used in the production of radio pharmaceutical substance is
- Oxygen 15

When an alpha particle is emitted the atomic number of isotope
- Decreases by two

When a nucleus emits a beta particle the mass number of atom
- Remains the same

The half life period of Carbon 14 is:
- 5760 years

Reactions involving changes in the nucleus are called
- Nuclear energy

Pitch blende is the ore of
- Uranium

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**BALLAST TANKS**

These are large tanks found in submarines. When a submarine is to be submerged, these tanks are filled with sea water. This increases the total weight of the vessel and its sinks. To make it rise to the surface, compressed air is pumped into the tanks which forces the water out. The weight of submarine decreases and rises to the surface.
• Which radiation exhibit highest ionizing power
  ✓ Alpha rays
• The scientist who showed that radioactive isotope may give off three types of radiation was
  ✓ Rutherford
• Alpha particle is the nucleus of which atom?
  ✓ Helium
• Beta rays are emitted by the atom from
  ✓ The neutron of its nucleus
• The first product formed in Uranium 238 disintegration series is
  ✓ Thorium - 234
• Isotones differ only in the number of
  ✓ Neutrons
• Beta rays are a stream of
  ✓ Electrons
• A particle similar to electron carrying positive charge is called
  ✓ Positron
• What is Nuclear fission?
  ✓ The process of splitting the nuclei of heavy atoms into two approximately equal masses
• What is Nuclear reactor?
  ✓ Nuclear reactor is a device used to produce nuclear energy by controlled nuclear fission
• Write examples of Moderators:
  ✓ Graphite and heavy water
• What are control rods?
  ✓ It is made of substance which can absorb neutrons and control the rate of chain reaction
• The most suitable particle for splitting the nucleus of an atom is
  ✓ Neutron
• The substances used to absorb neutrons are
  ✓ Cadmium or boron rods
• What is Moderator?
  ✓ It is the substance used to slow down the fast neutrons in a nuclear reactor
• The minimum mass of a radioactive substance required to sustain chain reaction is called its
  ✓ Critical mass
• The process of repeated fission of the remaining fissionable atoms by the neutrons produced by earlier fission is called
  ✓ Chain reaction

INVENTION
• Photoelectric effect, Theory of Relativity etc. were discovered by
  ✓ Albert Einstein
• Pressure cooker was invented by
  ✓ Denis Papin
• Electric bulb was invented by Thomas Alva Edison who is known as
  ✓ “Wizard of Menlo Park”
• Tachyons are the particles which travel faster than light. They are invented by a Keralite
  ✓ E.C.G. Sudarshan
• John Barden, Walter H. Barttain and William Shockley are the scientists who invented
  ✓ Transistor
• Laser was invented by
  ✓ Theodore H. Maiman
• “Radar” was invented by
  ✓ Albert H. Taylor and Leo C. Young

Physics
- Who invented “Clinical Thermometer”
  ✓ Thomas Clifford Albert
- Father of Atom bomb is
  ✓ Robert Oppenheimer
- Who discovered nuclear fission
  ✓ Otto Hahn
- “Father of Hydrogen Bomb”
  ✓ Edward Teller
- Who first made an electromagnet?
  ✓ William Sturger
- X-ray was invented by
  ✓ Wilhelm K Roentgen
- Who discovered the existence of the nucleus inside the atom?
  ✓ Rutherford - in 1911
- Who propounded the theory of electrolysis?
  ✓ Faraday
- Who discovered Battery (electric)?
  ✓ Alessandro Volta
- Who discovered superconductivity?
  ✓ Cammerling Onnes

**MISCELLANEOUS**

- What is called stress?
  ✓ The restoring force per unit area set up inside the body is called stress
- What is the unit of stress?
  ✓ C.G.S. system-dyne/cm², M.K.S. system-newton/m²
- Which substance has the highest elasticity?
  ✓ Steel
- What is the escape speed from the moon?
  ✓ 2.37 km/sec.
- Which is the direction of rotation of a synchronous satellite of earth?
  ✓ West to east
- A particular star has mass twice that of sun. This star will end up eventually as a
  ✓ Black hole
- The escape velocity of a projectile from the earth is approximately
  ✓ 11.2 km/sec.
- As we go from the equator to the poles, value of ‘g’
  ✓ increases
- The weight of a body at the centre of the earth is
  ✓ Zero
- Weightlessness experienced while orbiting the earth in space ships is the result of
  ✓ Acceleration
- To an astronaut in a spaceship the sky appears black due to
  ✓ Absence of atmosphere in its neighbourhood
- The value of ‘g’ on equator is
  ✓ Minimum
- Persons sitting in artificial satellite of the earth have
  ✓ Zero weight
- The period of geo-stationary artificial satellite of the earth is
  ✓ 24 hrs.

- Who invented Diesel Engine?
  ✓ Rudolf Diesel
Physics

- The atmosphere is held to the earth by:
  - Gravity

- What is thermoplastic?
  - A substance which softens on heating and hardens on cooling

- Where does the water in a reservoir exert pressure?
  - In all direction

- Which quantity has direction as well as magnitude?
  - Vector quantity

- What is the branch of science concerning the study of bodies in motion?
  - Kinetics

- The rays that come from sun and other stars are called:
  - Cosmic rays

- Sun and other stars exist in the state of:
  - Plasma

- It is difficult to cook at high altitudes because of:
  - Decrease in boiling point of water

- If the door of a refrigerator is kept open with the main supply, the temperature of the room:
  - Increases

- Hygrometer is used for measuring:
  - Amount of water vapour in air

- A cold bottle is taken from a refrigerator and weighed. As time progresses we will find:
  - the bottle slightly gains weight

- Which has the shortest wavelength?
  - $\gamma$ ray

- Which has the longest wavelength?
  - Radio waves

- Which waves are used for telecommunication through artificial satellites?
  - Microwaves

- Which electromagnetic wave has the highest frequency?
  - $\gamma$ ray

- What increases with the increase of the penetrating power of X-rays?
  - Frequency

- What are X-rays?
  - They are electromagnetic radiation

- A simple pendulum is set up inside a lift. The period of oscillations is maximum when the lift is:
  - Moving downward with acceleration

- How will the period of oscillation of simple pendulum be affected if it is moved from the surface of earth to a mine?
  - It will increase

- Two bullets are fired horizontally with different velocities from the same height. Which will reach the ground first?
  - Both will reach simultaneously

- A particle moves in a plane with a constant acceleration in a direction different from the initial velocity. The path of the particle is:
  - Parabola

- Material which is repelled feebly by a magnet
  - Diamagnetic material

- Material which is attracted feebly by a magnet
  - Paramagnetic

- Electric motor converts:
  - Electrical energy into mechanical energy

- The shape of rain drop is spherical due to:
  - Surface tension

- Magnetism at the centre of the bar magnet is:
  - Zero

- Fuses are connected in ....... to the live wire
  - Series

- When seen in blue light a red rose will appear as:
  - Black

- A steam engine convert heat energy into:
  - Mechanical energy

- A person climbing a hill bends forward inorder to:
  - Increase stability

- Winding a watch is actually the process of storing:
  - Potential energy

- Pitch of a sound depends upon its:
  - Frequency