Very short answer Questions.

Why is iron called good conductor of heat?
Iron is called a good conductor of heat because it allows heat to pass through it quickly.

Write one difference between copper and a piece of wood on the basis of conduction of heat:
Copper conducts heat quickly, whereas wood does not conduct heat well.

What is the source of heat?
The source of heat can be the Sun, fire, or electricity.

What is meant by greenhouse effect?
The greenhouse effect is the trapping of heat by the earth's atmosphere.

Write any one utility of greenhouse effect:
The greenhouse effect keeps the Earth warm.

We wear white and light clothes in summer, why?
We wear white and light clothes in summer because they reflect heat and keep us cool.

What is the normal temperature of a healthy human body?
The normal temperature of a healthy human body is 37°C.

What is a calorimeter?
A calorimeter is an instrument used to measure heat.

What is the SI unit of heat?
The SI unit of heat is joule (J).

What is meant by conduction method of heat transmission?
Conduction is the method of heat transmission through a solid without the movement of the solid itself.

Write one utility of heat conduction in daily life:
Heat conduction is used in cooking food on a pan.

What is convection?
Convection is the transfer of heat by the movement of fluids like liquids and gases.

What is meant by convectional current?
A convectional current is the flow of fluid caused by temperature differences.

What is a greenhouse?
A greenhouse is a glass structure used to grow plants by trapping heat inside.

Define mirror:
A mirror is a polished surface that reflects light.

What is a convex mirror?
A convex mirror is a mirror that is curved outward.

What is a concave mirror?
A concave mirror is a mirror that is curved inward.

What is refraction of light?
Refraction of light is the bending of light when it passes from one medium to another.

What is a plane mirror?
A plane mirror is a flat and polished mirror.

Why is a convex mirror called a diverging mirror?
A convex mirror is called a diverging mirror because it spreads out light rays after reflection.

Write one difference between real image and virtual image:
A real image can be projected on a screen, but a virtual image cannot be projected.

Write one utility of a convex mirror:
A convex mirror is used in vehicle side mirrors for a wider view.

Why is a concave mirror called a converging mirror?
A concave mirror is called a converging mirror because it brings parallel rays of light to a focus.

Why is a convex mirror used in reflectors for streets?
A convex mirror is used in street reflectors because it provides a wide view of the area.

You are given one convex mirror and one concave mirror. Which mirror is suitable for doing makeup? Why?

A concave mirror is suitable for doing makeup because it magnifies the face.

Define reverberation:
Reverberation is the repeated echo of sound in a hall or closed space.

Write down the formula to calculate the speed of sound:
The speed of sound is calculated using the formula $v=f\times\lambda$.

Write down the SI unit of wavelength:
The SI unit of wavelength is meter (m).

Write down the symbol of wavelength:
The symbol of wavelength is λ.

Write down the SI unit of frequency:
The SI unit of frequency is hertz (Hz).

What is a longitudinal wave?
A longitudinal wave is a wave in which particles vibrate parallel to the direction of wave propagation.

Short answer questions

What is heat? Write its SI unit.
Heat is a form of energy that flows from a hotter body to a colder body. Its SI unit is joule (J).

Write down the relation between heat and temperature.
The relation between heat and temperature is that heat causes the temperature of a body to rise, and the amount of heat is proportional to the temperature change, given by $Q=mc\Delta T$.

Write in brief about the radiation of heat.
Radiation of heat is the transfer of heat in the form of electromagnetic waves without the need for any medium.

Write any two applications of conduction of heat in daily life.

Conduction of heat is used in cooking food on a pan, and in heating water in a kettle.

Write any two differences between sea breeze and land breeze:

Sea breeze occurs during the day, while land breeze occurs at night.

Sea breeze blows from sea to land, while land breeze blows from land to sea.

Write down the two characteristics of the image formed by a plane mirror:
The image formed by a plane mirror is virtual and upright, and it is of the same size as the object.

What are the types of spherical mirrors? Name them.
The types of spherical mirrors are concave mirror and convex mirror.

The apparent depth of water in a pond appears less than the real depth. Why?
The apparent depth is less than the real depth because light bends away from the normal when it passes from water to air due to refraction.

What is real image? Write its two characteristics.
A real image is an image formed when light rays actually meet at a point. It can be projected on a screen and is always inverted.

Air is called rarer medium and glass is called denser medium out of air and glass. Why?
Air is called a rarer medium because light travels faster in it, and glass is called a denser medium because light travels slower in it.

What is meant by denser medium? Write with an example.
A denser medium is a material in which light travels slower compared to another medium; for example, water is denser than air.

Differentiate between incident ray and reflected ray:
The incident ray is the ray of light that falls on a surface, whereas the reflected ray is the ray of light that bounces off the surface.

Why is a convex mirror called a diverging mirror?
A convex mirror is called a diverging mirror because it spreads out parallel rays of light after reflection.

Write any two differences between concave mirror and convex mirror:

A concave mirror converges light rays, while a convex mirror diverges light rays.

A concave mirror can form real and virtual images, whereas a convex mirror forms only virtual images.

What is frequency? Write down its SI unit.
Frequency is the number of oscillations or vibrations per second. Its SI unit is hertz (Hz).

Write down the relation between kilohertz and megahertz.
1 megahertz (MHz) = 1000 kilohertz (kHz).

Write down the effects of reverberation.
Reverberation can make speech unclear, cause echo confusion, and disturb hearing in large halls.

If the sound of wavelength of 0.22 m has a frequency of 15 kilohertz, calculate the speed of wave.
The speed of sound
$v=f\times\lambda=15000\times0.22=3300m/s$.

What is wavelength? Write down its formula and SI unit.
Wavelength is the distance between two consecutive crests or troughs of a wave. Its formula is
$\lambda=v/f$ and the SI unit is meter (m).

Why does a stick half immersed in water appear bent?
A stick appears bent in water because light bends when it passes from water to air due to refraction, causing the apparent position to shift.

Why is echo fainter than the original sound?
Echo is fainter than the original sound because some energy is lost due to absorption by air and obstacles during reflection.

Long answer questions.

Give reasons.

We feel cool in summer and warm in winter in the house made of mud/soil.

Houses made of mud or soil have thick walls that act as natural insulators. They prevent external heat from entering in summer, keeping the house cool, and retain internal heat in winter, keeping the house warm.

Coloured plastic is used in the roof of artificial greenhouse of cold regions for the growth of plants.

Coloured plastic allows sunlight to enter the greenhouse and traps heat inside, creating a warm environment for plants. This helps plants grow properly even in cold regions.

Write any four effects of greenhouse effect.

Four effects of greenhouse effect:

The greenhouse effect keeps the Earth warm, maintaining a suitable temperature for life.

It prevents extreme cooling of the Earth during the night.

Excessive greenhouse effect can lead to global warming, causing melting of ice caps and climate changes.

It affects weather patterns, rainfall, and agricultural conditions around the world.

Describe the structure of thermos flask with figure.

A thermos flask is used to keep liquids hot or cold for a long time. It consists of a **double-walled container** made of glass or metal. The space between the two walls is a **vacuum**, which prevents heat transfer by **conduction and convection**. The inner wall is usually **silvered** to reflect heat, reducing **heat loss by radiation**. The flask also has a **tight-fitting stopper** to prevent heat loss through the opening.

Figure from book.

Describe the process of blowing air with figure.

Air can be blown from one place to another by using a pump or bellows. When the pump handle is pushed, it **compresses the air** inside, increasing the air pressure. This high-pressure air **moves out through the nozzle**, creating a strong airflow. When the handle is pulled back, air enters the pump again, and the process can be repeated. This principle is used in **inflating tires, blowing air into furnaces, or in musical instruments** like the flute.

Define electromagnetic wave with examples.
An electromagnetic wave is a wave that can travel through a vacuum without any medium. It consists of **oscillating electric and magnetic fields** perpendicular to each other and the direction of wave propagation. Examples include **light waves, radio waves, X-rays, and microwaves**.

Write any two utilities of radiation in daily life.
The two utilities of radiation in daily life are:

Radiation from the Sun provides **heat and light** necessary for life on Earth.

Microwaves are used to **cook food quickly** in microwave ovens.

What is light? Name any two sources of light.

Light is a form of energy that enables us to see objects by illuminating them. Two sources of light are the **Sun** and an **electric bulb**.
Complete the given ray diagram and write any two natures of the image formed.

(Will do in class)

Write the causes of refraction of light. Write two differences between concave mirror and convex mirror.

Causes of refraction of light:
Refraction of light occurs because light travels at **different speeds in different media**. When light passes from a rarer medium to a denser medium, it **slows down and bends toward the normal**, and when it passes from a denser medium to a rarer medium, it **speeds up and bends away from the normal**.

Two differences between concave mirror and convex mirror:

A concave mirror **converges** light rays, whereas a convex mirror **diverges** light rays.

A concave mirror can form **real or virtual images**, while a convex mirror forms **only virtual images**.

Write down the relation between hertz and megahertz. The sound of wavelength 0.032m has a frequency of 25 kilohertz. Calculate the speed of the wave.

Solution,
1 megahertz (MHz) = 1000 kilohertz (kHz).
The speed of a wave is calculated using the formula

$v=f\times\lambda$. Here,
f=25 kHz=25000Hz and

λ=0.032m.
v=25000×0.032=800m/s

What do you mean by reverberation? Generally, auditoriums are provided with materials that produce reverberation. Why?
Reverberation is the repeated reflection of sound in a hall or room, which makes the sound persist even after the source has stopped. Auditoriums are provided with materials that produce controlled reverberation to **enhance the clarity and audibility of speech and music**, ensuring that sound reaches all corners of the hall.

What is wavelength? Write down its formula and SI unit.
Wavelength is the distance between two consecutive crests or troughs of a wave. Its formula is $\lambda=v/f$
where,
v is the speed of the wave and
f is its frequency. The SI unit of wavelength is meter (m).

What should be the distance between the reflecting surfaces and sources of sound to experience reverberation? The speed of sound in a medium is 1200m/s. If the wavelength of the sound is 15.5m, Calculate the frequency of the sound.

Distance between the reflecting surfaces and sources of sound to experience reverberation:
To experience reverberation, the distance between the source of sound and the reflecting surface should be at least **17 meters**. This ensures that the reflected sound reaches the listener after a short delay and can be heard distinctly.

The frequency of a sound wave is given by the formula:
$f = v/\lambda$

Where,
v=1200m/s (speed of sound)
λ=15.5m (wavelength)

Substitute the values:

f=1200/15.5
= 77.42Hz
Answer: The frequency of the sound is approximately 77.42 Hz.