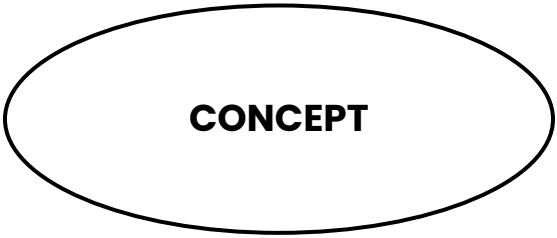
ENERGY WARRIOR

1.CONCEPT MAP



2. CHOOSE THE CORRECT ANSWER

1. When we rub our hands together, we produce _____ energy.
a) Light
b) Sound
c) Heat
d) Electrical

2. The energy stored in food is called _____ energy.
a) Kinetic
b) Potential
c) Chemical
d) Thermal

3. Solar panels convert _____ energy from the sun into _____ energy.
a) Light, heat
b) Heat, electrical
c) Light, electrical
d) Chemical, light

4.Which of the following is a renewable source of energy?
a) Coal
b) Natural gas
c) Solar
d) Petroleum

5.Which of the following are non-renewable source of energy?
a) Wind
b) Nuclear
c) Solar
d) Petroleum

3.ANSWER IN 10 WORDS

1.What is energy? Name its types.

_____

_____

2.How does planting more trees help in conserving energy?

_____

_____

3.List two ways you can save energy at home.

_____

_____

4.Why should we conserve energy?

_____

_____

.5.Why do you think it is important to use energy-saving bulbs?

_____

_____

4. FILL & IDENTIFY THE TYPE OF MATERIAL

Write Transparent (T), Translucent (t), or Opaque (O) for each sample.

Sample	Material Type (T / t / O)
1. Frosted acrylic panel	
2. Aluminum foil	
3. Polished glass rod	
4. Fiber cladding layer	
5. Optical-fiber core	

5.COMPREHENSION: READ & ANSWER

Read the passage, then answer in full sentences.

In your school, the hallways are lit with special glowing sticks instead of regular light bulbs. These sticks are made of clear plastic with a small LED light at one end. When the LED is turned on, the light travels inside the stick and only comes out at rough spots, making the hallway glow evenly. Unlike regular bulbs that use a lot of electricity and get hot, these sticks use very little power and stay cool, saving energy and keeping the school bright.

Questions:

1.Why do the glowing sticks save more energy than regular bulbs?

_____

_____

_____

2.How does the light stay inside the glowing stick?

_____

_____

_____

3.What happens if the stick has no rough spots?

_____

_____

_____

4.Can these sticks light up a classroom? Why?

_____

_____

_____

5.How can you make a dark corner brighter?

_____

_____

_____

6.EFFICIENT LIGHTING SOLUTION

Unit Conversions

- 1 W = 1 joule per second
- 1 kW = 1 000 W
- 1 kWh = energy used by 1 kW in 1 h (3.6 MJ)
- 1 lx = 1 lm/m^2
- 1 lm/cm^2 = 10 000 lm/m^2 = 10 000 lx
- % = “per hundred”

Scenario

You live in Bengaluru, and each evening from 7 pm to 11 pm your hallway is lit by a 60 W incandescent bulb. Electricity costs ₹ 5.80 per kWh. You decide to replace each bulb with a 1 m clear panel driven by an 8 W LED at its base. The LED feeds in 800 lx. Four frosted spots along the panel scatter light so the top end still receives at least 200 lx.

Conversational Questions & Answers

1.“Can you calculate monthly kilowatt-hours for the 60 W bulb versus the 8 W LED panel?”

2.”At ₹ 5.80 per kWh, what are the monthly costs and savings for each setup?”

3.“We start with 800 lx at the bottom and need 200 lx at the top through four spots—what percent should each spot scatter?”

4.“What’s one clever tweak to make this corridor lighting even more efficient or glow more evenly?”

7.ANSWER IN 20 WORDS

1. Why does total internal reflection trap light? Draw a schematic diagram of a light guide that traps light through the phenomenon

2. Why aim for uniform illumination along the hallway?

3. How does guided light improve energy efficiency?

4. What role do frosted spots serve in the panel?