

**GREENFIELDS PUBLIC SCHOOL, DILSHAD GARDEN**

**SUMMER HOLIDAY HOME WORK (2026-27)**

**GRADE X (SCIENCE)**

**ACTIVITY : ART INTEGRATED PROJECT: SOURCES OF ENERGY**

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*In order to appreciate and imbibe the aesthetic values of the rich heritage of our country, the learners of grade X are assigned to work upon the rich Indian territories Andaman and Nicobar, Lakshadweep under ‘**Ek Bharat Shrestha Bharat**’ Programme.*



**■ Art Integrated Project File on: “Sources of Energy”**

The Andaman & Nicobar Islands, located in the Bay of Bengal, are a group of over 500 islands with limited local energy resources. Due to their isolated location and ecological sensitivity, energy generation and management in these islands present unique challenges. Traditionally dependent on diesel-based power, the region is gradually shifting towards renewable energy sources to ensure sustainability, energy security, and environmental protection.

The Andaman & Nicobar Islands are on a path toward sustainable energy development. While there are many challenges, the ongoing shift from diesel to renewable sources like solar and biomass is vital for the region’s environmental health and energy security. With continued government support and innovation, the islands can become a model for green energy transition in remote areas.

**Project Components:**

- Project File (Handwritten)
  - Poster (Chart Paper)
  - Wall Hanging (Craft-Based)
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## 1. Project File Contents

### Cover Page

- Project Title: **"Sources of Energy: Powering Our Future"**
- Your Name, Class, Roll Number, School Name □ Visual Art Elements:
  - Border with Andaman tribal motifs
  - A sun, windmill, and ocean waves (to show solar, wind, and tidal energy)



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### Page 1: Introduction

- What is energy?
- Importance of energy in daily life
- Link energy with sustainability
- Quote: *"Energy conserved is life preserved."*

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### Page 2: Types of Energy


- **Two main categories:**  Renewable  
 Non-Renewable
- Use a two-column format with **icons/drawings:**
  - Renewable: Sun, windmill, water dam
  - Non-renewable: Coal, oil drum, gas cylinder



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### Page 3: Renewable Sources

- Solar, Wind, Hydro, Biomass, Geothermal, Tidal
- Add:
  - Description (2–3 lines each)
  - One advantage ○ Colorful diagrams

 **Art Integration Tip:** Use natural patterns and ocean waves inspired by Andaman tribal art to design your page.

### Page 4: Non-Renewable Sources

- Coal, Petroleum, Natural Gas, Nuclear
  - 
  - Brief explanation with disadvantages
  - Illustrate air and water pollution using simple symbols (e.g., black smoke clouds)
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#### Page 5: Andaman & Nicobar Islands – Energy Scenario

- Tidal energy potential
  - Use of diesel generators (non-renewable)
  - Solar power development in remote islands
  - Mention tribal communities’ traditional sustainable practices
  - Add a small map of A&N Islands and draw symbols of tidal/solar energy
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#### ■ Page 6: Comparison Table

Make & decorate the table for the comparison between renewable & non-renewable with borders using local tribal art styles (e.g., geometric fish/bird patterns) with the parameters of their sources, sustainability, cost and polluting rate.

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#### ■ Page 7: Art Integration Explanation

Explain how art helped in understanding the concept:

“I used visual art to express the scientific concept of energy. I drew solar panels, windmills, and pollution effects, which helped me understand their working and impact better. Using Andaman tribal designs made the presentation more creative and culturally rich.”

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#### ■ Page 8: Slogans & Quotes

- "Switch On the Sun, Switch Off Pollution"
- "Don't be foolish – Save Energy!"
- "Nature gives, don't abuse – Use Renewable Energy"

Write slogans in **bubble letters or calligraphy**. Add colorful borders.

#### ■ Page 9: Conclusion

- Importance of shifting to renewable sources □      A short personal pledge like :

“I promise to save energy by switching off lights, using public transport, and promoting solar power.”

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#### ■ Page 10: Bibliography

- NCERT Class X Science Book
- <https://mnre.gov.in/>
- <https://andaman.gov.in/>
- Any other web/print sources used

## **2. Poster Design (A3 or A2 Size Chart Paper)**

Title: "Energy: Today's Choice, Tomorrow's Future" ✓

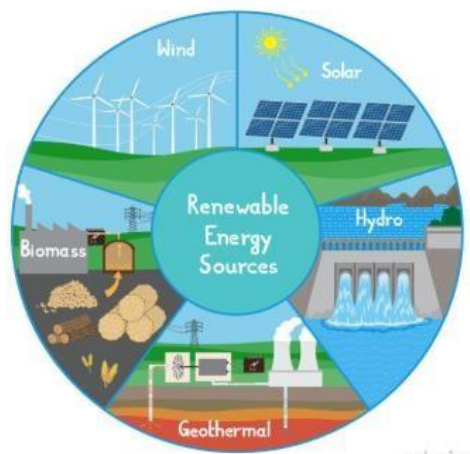
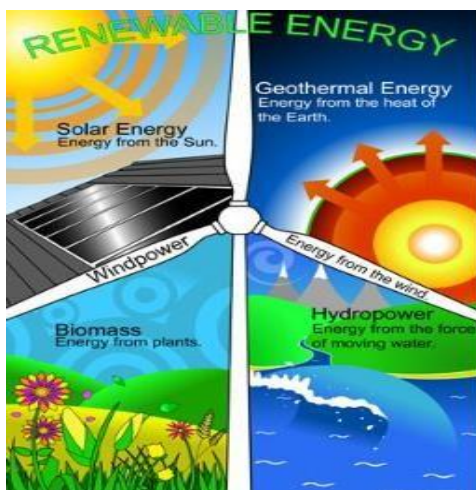
Layout:

- Left Half: **Renewable Sources** □ Right Half: **Non-Renewable Sources**

✓ Visuals:

- Diagrams of sun, wind turbine, water dam, coal plant, oil rig
- Include **slogan at the bottom**: "Use Green, Live Clean"

✂ Decorate using colors inspired by Andaman beaches (turquoise, green) and tribal border motifs.



## **3. Wall Hanging (Craft-based)**

✓ Option: "Energy Chain Garland"

- Use 6–8 circular/paper shapes joined by thread □ Each shape has:
  - One energy source (image + name)
  - Color theme: Green for renewable, Grey for non-renewable



- Top tag: **“Power Circles of the Future”**

✓ Option: Accordion Hanging Strip

Zig-zag folded colored paper

Each fold shows one energy type with diagram + 1 fact

- Include a panel for **Andaman & Nicobar** highlighting tidal and solar potential



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### Let's Recall

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- **Revise Chapter 1. Chemical Reactions and Equations, Chemical symbols and their valency.**
- **Chapter 6: Life Processes along with well labelled diagrams in the lesson.**
- **Chapter 9: Light- Reflection & Refraction**

### **WORKSHEET**

- **To be done in Science Notebook/Register.**

**BIOLOGY QUESTIONS FOR HOLIDAY HOMEWORK**

### **ASSIGNMENT 1: LIFE PROCESSES**

**Q1. When a few drops of iodine solution are added to rice water, the solution turns blue-black in colour. This indicates that rice water contains:**

- (a) fats**
- (b) complex proteins**
- (c) starch**
- (d) simple proteins**

**Q2. Which is the first enzyme to mix with food in the digestive tract?**

- (a) Pepsin**
- (b) Cellulose**
- (c) Amylase**
- (d) Trypsin**

**Q3. Among the following choose the correct option which includes the organisms that have a holozoic mode of nutrition: (a) Plasmodium and Amoeba**

- (b) Parakeet and Amoeba**
- (c) Paramecium and Plasmodium**
- (d) Paramecium and Parasite**

**Answer the question Q4 and Q5 by selecting appropriate option given below:**

**a) Both A and R are true and R is correct explanation of A b) Both A and R are true and R is not correct explanation of A c) A is true but R is false d) A is false but R is true**

**Q4. Assertion (A): Molecular movements are needed for life.**

**Reason (R): Body structures made up of these molecules need continuous repair and maintenance.**

**Q5. Assertion (A): The opening and closing of the pore is a function of the guard cells.**

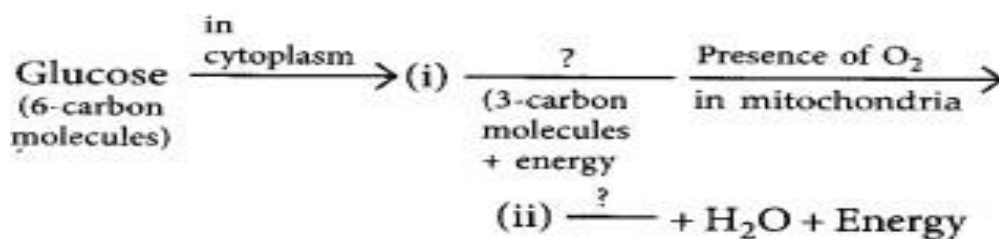
**Reason (R) : Stomatal pores are the site for exchange of gases by diffusion.**

**Q6. (a) In the process of respiration, state the function of alveoli.**

**(b) Rate of breathing in aquatic organisms is much faster than that in terrestrial organisms.**

**Give reasons.**

**(c) Complete the following pathway showing the breakdown of glucose.**



Q7. (a) Mention any two components of blood.

(b) Trace the movement of oxygenated blood in the body.

(c) Write the function of valves present in between atria and ventricles.

(d) Write one structural difference between the composition of artery and veins.

Q8. Explain why a hungry person salivates on smelling or thinking of food, while a well fed person seldom does that.

Q9. Draw excretory system in human beings and label the following organs of excretory system which perform following functions:

(i) form urine

(ii) is a long tube which collects urine from kidney

(iii) store urine until it is passed out.

Q10. A patient's stool is found to have heavy proportion of fat, indicating fat indigestion in the body. What are the possible reasons?

### CHEMISTRY QUESTIONS FOR HOLIDAY HOMEWORK

#### ASSIGNMENT 2: CHEMICAL REACTIONS AND EQUATIONS

Q1. Magnesium ribbon is rubbed before burning because it has a coating of

(a) basic magnesium carbonate

(b) basic magnesium oxide

(c) basic magnesium sulphide

(d) basic magnesium chloride

Q2. Which of the following is an endothermic process?

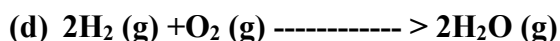
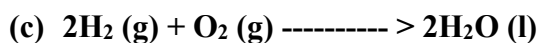
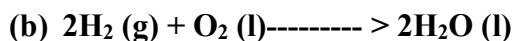
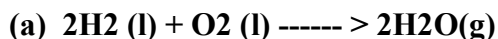
(a) Dilution of sulphuric acid

**(b) Sublimation of dry ice**

**(c) Condensation of water vapours**

**(d) Respiration in human beings**

**Q3. In which of the following chemical equations, the abbreviations represent the correct states of the reactants and products involved at reaction temperature?**



Answer the question Q4 and Q5 by selecting appropriate option given below:

**a. Both A and R are true and R is correct explanation of A b. Both A and R are true and R is not correct explanation of A c. A is true but R is false**

**d. A is false but R is true**

**Q4. Assertion (A): A white washed wall develops a coating of calcium carbonate after a few days.**

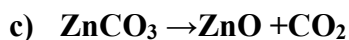
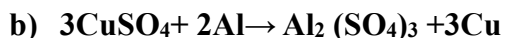
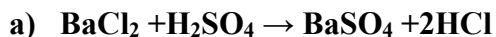
**Reason (R): Calcium oxide on the wall reacts slowly with carbon dioxide in the air.**

**Q5. Assertion: Rusting of Iron is endothermic in nature.**

**Reason: As the reaction is slow, the release of heat is barely evident.**

**Q6. A substance X, which is an oxide of a group 2 element, is used intensively in the cement industry. This element is present in bones also. On treatment with water, it forms a solution which turns red litmus blue. Identify X and also write the chemical reactions involved.**

**Q7. Classify the following reaction as combination, decomposition, displacement and double displacement reaction:-**



**Q8. Write chemical equations for the following and balance them.**

**l. Zinc carbonate(s)  $\rightarrow$  Zinc oxide + Carbon dioxide**

II. Potassium bromide (aq) + Barium iodide (aq) → Potassium iodide + Barium bromide. III.

Nitrogen + Hydrogen → Ammonia

### PHYSICS QUESTIONS FOR HOLIDAY HOMEWORK

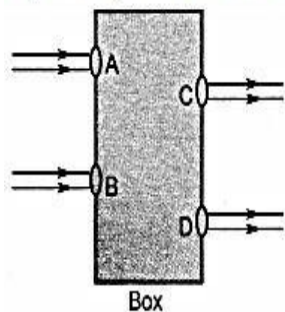
#### ASSIGNMENT 3: LIGHT

Q1) When a plane mirror is rotated through a certain angle, the reflected ray turns through twice as much and the size of the image:

- (a) is doubled
- (b) is halved
- (c) becomes infinite
- (d) remains the same

Q2.

Beams of light are incident through the holes A and B and emerge out of box through the holes C and D respectively as shown in the figure. Which of the following could be inside the box?



- (a) A rectangular glass slab
- (b) A convex lens
- (c) A concave lens
- (d) A prism

Answer the question Q3 and Q4 by selecting appropriate option given below:

- a. Both A and R are true and R is correct explanation of A
- b. Both A and R are true and R is not correct explanation of A
- c. A is true but R is false

d. A is false but R is true

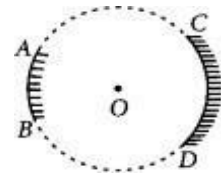
**Q.3. Assertion (A) :** A ray passing through the centre of curvature of a concave mirror after reflection, is reflected back along the same path.

**Reason (R) :** The incident rays fall on the mirror along the normal to the reflecting surface.

**Q.4. Assertion(A) :** When the object moves with a velocity 2 m/s, its image in the plane mirror moves with a velocity of 4 m/s.

**Reason (R) :** The image formed by a plane mirror is as far behind the mirror as the object is in front of it.

**Q5. AB and CD, two spherical mirrors, from parts of a hollow spherical ball with its centre at O as shown in the diagram. If arc AB = 12 arc CD, what is the ratio of their focal lengths? State which of the two mirrors will always form virtual image of an object placed in front of it and why?**



**Q6.a)** With the help of a ray diagram state what is meant by refraction of light. State Snell's law for refraction of light and also express it mathematically.

**b)** The refractive index of air with respect to glass is  $\frac{2}{3}$  and the refractive index of water with respect to air is  $\frac{4}{3}$ . If the speed of light in glass is  $2 \times 10^8$  m/s, find the speed of light in (i) air, (ii) water.

**Q7.** An object 4.0 cm in size, is placed 25.0 cm in front of a concave mirror of focal length 15.0 cm.

(i) At what distance from the mirror should a screen be placed in order to obtain a sharp image?

(ii) Find the size of the image.

(iii) Draw a ray diagram to show the formation of image in this case.

**Q8.** Draw a ray diagram in each of the following cases to show the formation of image, when the object is placed:

(i) between optical centre and principal focus of a convex lens.

(ii) anywhere in front of a concave lens.

(iii) at 2F of a convex lens.

State the signs and values of magnifications in the above mentioned cases

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