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| MTF Solar 2 |
| TOPIC COVERED |
| **1.: Blood Circulation and Transport** |
| **2.The Variety of Resources on Earth** |
| **3. The Air Around Us** |
| **4. Sources of Energy** |

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| Your goals are the road maps that guide you and show you what is possible for your life. |



**Chapter 2: Blood Circulation and Transport**

* 1. **The transport system in humans**

**1** State the **four** chambers in the heart.

**2** State **three** types of valves in the heart.

**3** What is the largest artery in the body?

**4** What is the largest vein in the body?

**5** What is the structure in blood vessels that prevents blood from flowing back?  
  
**6** State the organ which pumps and circulates blood to the whole body  
  
**7** Among the artery, vein or blood capillary, which contains a valve?  
  
**8** Name the blood vessel that carries blood out of the heart.

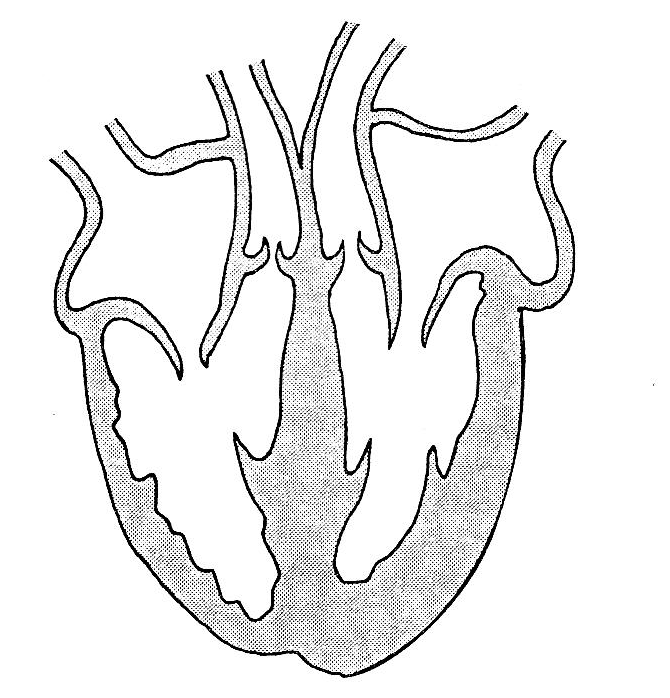
**10** State the type of blood vessel that has the smallest lumen.

**11** State the type of blood vessel that is one-cell thick.  
  
**12** State the type of blood vessel that carries oxygenated blood.  
  
**13** State the type of blood vessel that carries deoxygenated blood.  
  
**14** State the type of blood vessel that has the thickest muscular wall.  
  
**15** Name the blood vessel that acts as the connectors that join the blood   
 vessels of arteries to that of veins.  
  
**16** State **two** functions of the blood circulatory system in humans.

**17** Name the artery that carries deoxygenated blood.  
  
**18** Name the vein that carries oxygenated blood.

**19** State the type of blood vessel that carries high-pressured blood.  
  
**20** State **two** types of blood systems circulation in humans. *(***21** State the type of blood circulation that transports blood from the heart to   
 the lungs and back to the heart.

**22** State the type of blood circulation that transports blood from the heart to   
 all parts of the body and back to the heart.  
  
 23. The figure below shows a longitudinal section of a human heart.



P

Q

Valve X

i. Label the four chambers in the heart using the words given

Right atrium Right ventricle Left atrium Left ventricle

ii. Name valve X and state its function.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| iii. Draw the cross section of the blood vessel P and Q  p Q  24. Draw lines to show the correct match between the function of the blood vessel and their adaptation  Avoid the back flow of blood  One cell thick wall  Has valve  Has very thick and elastic muscular wall  Enable exchange of substances  Transports blood at high pressure  Transports blood at high pressure  Enable the exchange of substance   * 1. **Human blood**  1. Name the liquid part of blood. 2. State the function of a red blood cell. 3. What is the shape of a red blood cell? 4. What is the function of a white blood cell? 5. What is the function of platelets? 6. Name the blood cell that contains a nucleus. 7. Name the site where blood cells are produced. 8. State **four** groups of human blood. 9. A person who donates his blood to another is called a ........... 10. A person who receives blood from another is called a…….. 11. Name the people with blood group O. 12. Name the people with blood group AB. 13. State the type of blood that can be donated to the person with blood group B 14. State the type of blood that can be donated to the person with blood group O. 15. State the type of blood that can be donated to the person with blood group AB. 16. Identify the types of blood cells.     **(a) (b) (c)**      **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  17. State **False** or **True** for each statement below  i. The shape of the white blood cell is biconcave ( )  ii. Platelets help blood to clot ( )  iii. Red blood cells contains nucleus ( )  iv. People with blood group O is known as universal donors ( )  v. Mixing incompatible blood group leads to agglutination ( )    **2.3 The transport system in plants**   1. Name the pores or openings on the surface of leaves.   **2** Name the structure in leaves that controls the size of the stomata.  **3** Predict the size of stomata during a hot day.  **4** State the process that occurs in plants where water is lost in the form of   water vapour through evaporation from the surface of leaves.  **5** State the process that removes excess water from plants and transports   water and mineral salts from the roots to the whole plant.  **6** State **four** factors that affect the rate of transpiration.   **7** State the relationship between temperature and the rate of transpiration.  **8** State the relationship between light intensity and the rate of transpiration.  **9** State the relationship between moving air and the rate of transpiration.  **10** State the relationship between air humidity and the rate of transpiration.  **11** Predict the rate of transpiration on a rainy day.  **12** Label structures *X* and *Y* for the stem below.    **13** What is the function of xylem?  **14** What is the function of phloem?  **15** Where is the location of xylem in the stem?  **16** Where is the location of phloem in the stem?  *17*. The figure below shows a structure found on a leaf  i. Label stoma on the figure  ii. What is its function  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  iii. What is the process occur through this structure  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  iv. During a cool day the process in (iii) occurs at lower rate. Explain.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  v. State 2 advantages of the process to the plants  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
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Chapter 4: The Variety of Resources on Earth

**4.1 Knowing the different resources on Earth**

1. Draw lines to show the correct match between the basic resources on Earth and their usage

Draw line as shown below.

Soil

Water

Mineral

Living things

Fossil fuel

Used by plants for photosynthesis

Used as sources of energy

Sources of food, building materials and clothes

Produce various metals

Supports human beings, animals and plants

2. Air is another basic resource. It consists of a mixture of various gasses such as oxygen, nitrogen and carbon dioxide. Name the gas according to their function

Respiration

Photosynthesis

Support combustion

**4.2 Understanding what elements, compounds and mixtures are**

3. The figure below shows 3 types of substances element, compound and mixture. Complete the

table

|  |  |  |
| --- | --- | --- |
| Substances | Type of substances | Example |
|  |  |  |
|  |  |  |
|  |  |  |

4. The following are examples of elements. Classify them into metals and non metals.

Sulphur Mercury Sodium Bronze Oxygen Carbon Silver Nitrogen Chlorine Copper

Non-metal

Metal

5. State **False** or **True** for each statement below

i. Sulphur is malleable and ductile ( )

ii. Zinc is a poor heat conductor ( )

iii. Chlorine is added to drinking water to kill microorganisms. ( )

iv. Mercury is used in thermometer to measure temperature. ( )

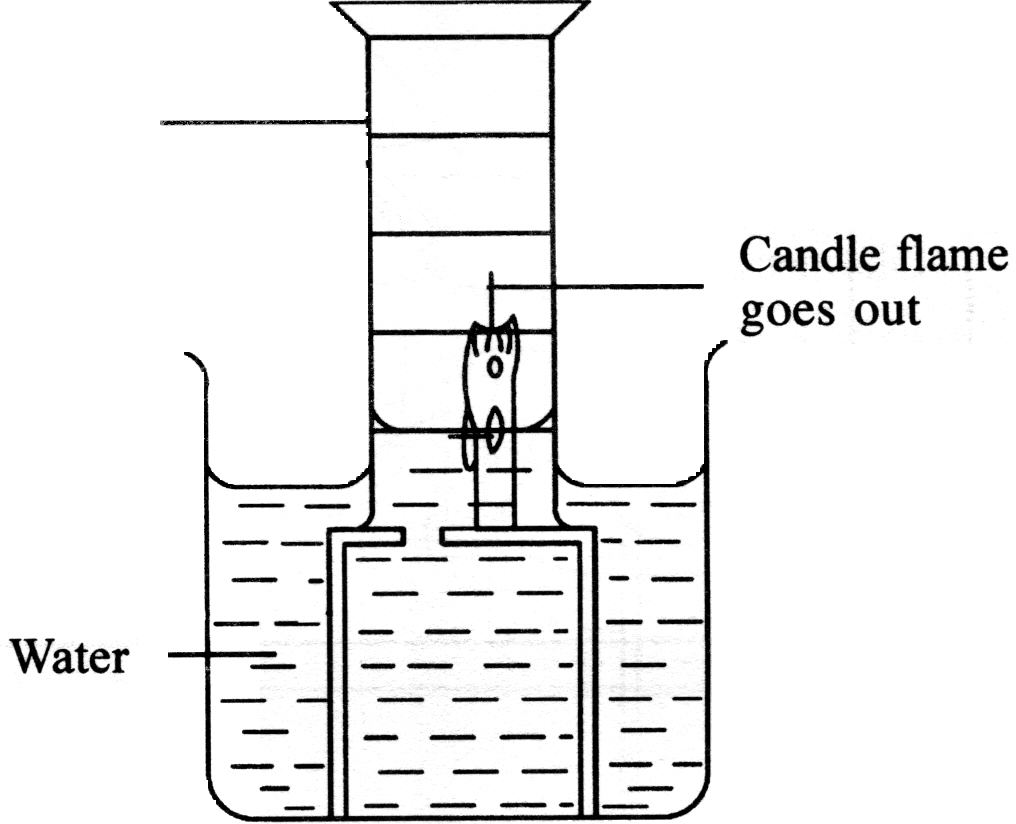
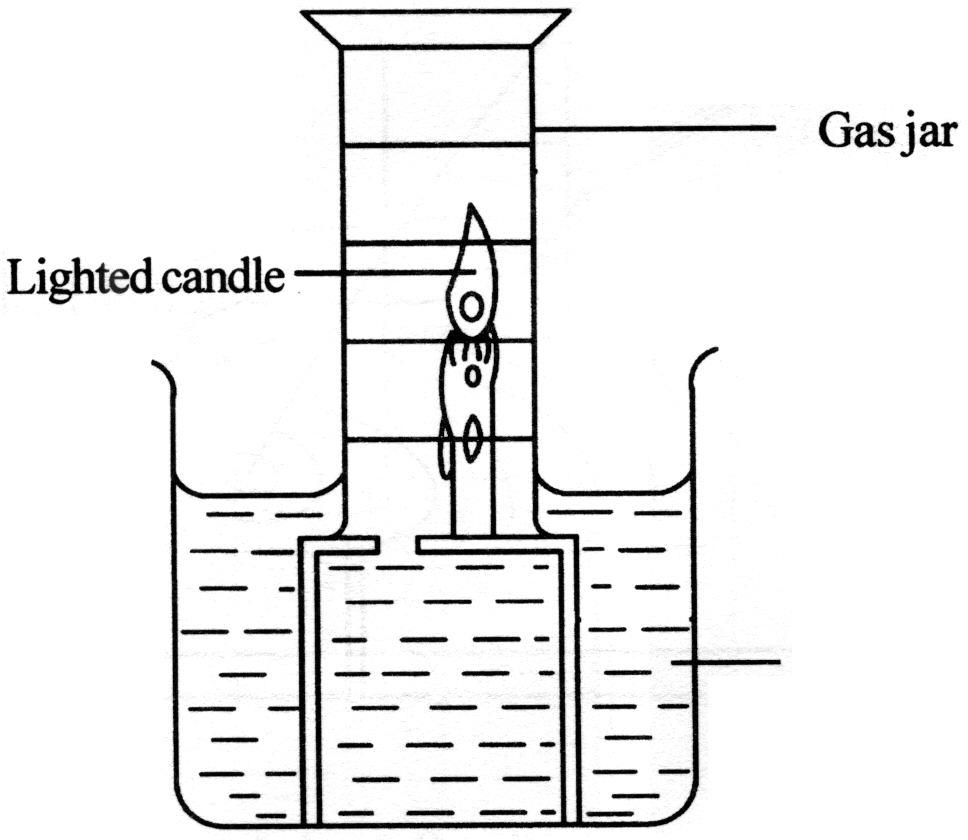
v. Salt can be separated from water by heating ( )

vi. Compound is formed when sugar crystals are dissolved in water ( )

vii. Water is an example of mixture ( )

**CHAPTER 5: The Air Around Us**

**5.1 Understanding the composition of air**



**Gas jar**

**Water**

1. The figure above shows an experiment to determine the percentage of a gas in air.

i. State the gas involved in this experiment

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ii. Based on the experiment give the property of gas in (i)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

At the end of the experiment, the flame of the candle extinguished and the level of the water in the

gas jar rises.

iii. Based on the observation given state 2 inferences

a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

vi. Calculate the percentage of the gas

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| --- |
| 2. The figure b*elow shows the composition of air.*  **P :**  78%  21%  **Q :**  Inert gases  **R :** |
| i. On figure above, label gases P,Q and R using the following words:  Carbon dioxide Oxygen Nitrogen |
| ii. State the percentage of gas Q in air.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **5.2 Understanding the properties of oxygen and carbon dioxide**  3. Draw lines to match oxygen with its properties.  Properties   * Slightly soluble in water * Very soluble in sodium hydroxide solution   Oxygen   * Ignites a glowing wooden splinter * Changes a moist blue litmus paper to red |

**5.3 Understanding that oxygen is needed in respiration**

4. Compare and contrast inhale and exhale air

|  |  |  |
| --- | --- | --- |
| Similarities  Both\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Both\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Inhaled air | Differences | Exhaled air |
|  | Percentage of oxygen |  |
|  | Percentage of carbon dioxide |  |
|  | Composition of water vapour |  |

5. 1. Draw lines to show the correct match between the statement and the gasses. Draw line as shown

below.

Oxygen

Carbon dioxide

The gas released during respiration

The gas that is needed for burning

Change the bicarbonate indicator from red to yellow

Clouds the lime water

Needed in germination

5.4 Understanding that oxygen is needed for combustion

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|  | 5. The figure shows the apparatus set-up to investigate the products of combustion.  Cobalt chloride paper  The kerosene is lit and a liquid is collected in test tube P.  i. What is the purpose of the cobalt chloride paper in this experiment  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ii What happen to the colour of the cobalt chloride paper?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  iii. State one inference related to the lime water at the end of the experiment.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    iv Based on the experiment, state 2 elements found in kerosene  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  v The experiment was repeated using charcoal. At the end of the experiment the colour of the cobalt  chloride paper remains unchanged. Explain |

**5 Analysing the effects of air pollution**

|  |  |  |
| --- | --- | --- |
| **Human activity** | **Pollutants** | **Effect** |
| **Open burning** | **Solid particles** |  |
|  | **Carbon monoxide** | **Reduce the oxygen that the blood can carry** |
|  | **Carbon dioxide** |  |
|  | **Chlorofluorocarbon (CFC)** |  |

5.6 Realising the importance of keeping the air clean

5. State **False** or **True** for each statement below on ways and habits to keep the air clean.

i. Recycle papers, bottle and cans to reduce waste ( )

ii. Use leaded petrol ( )

iii. Car pool ( )

iv. Practice biological control ( )

v. Fix vehicles with catalytic converter ( )

**Chapter 6: Sources of Energy**

**6.1 Understanding various forms and sources of energy**

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| --- | --- | --- |
| Figure 1 and 2 show two sources of energy.   |  |  | | --- | --- | | Source_Of_Energy  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Source_Of_Energy2  **\_**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |   Figure 1 Figure 2  i. In the spaces provided on Figure 1 and 2, **name** the sources of energy. |
| ii. State the energy changes which occur in Figure 1  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| iii Based on Figure 1 and 2, state twoadvantages of any of those sources of energy.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| iv. State two uses of the sources of energy in Figure 2  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**6.2 Understanding renewable and non-renewable energy**

2 The following are examples of energy sources. Classify them into renewable and non-renewable

energy sources.

Sun Natural gas Wave Wind Plants

Petroleum Coal Radioactive substances

Non-renewable

Renewable