

(Part - II)

Question # 02:

(a) Available Sources of renewable energy in Pakistan? Suggest policies.

Answer:-

"Energy Sources."

There are two categories of energy sources:

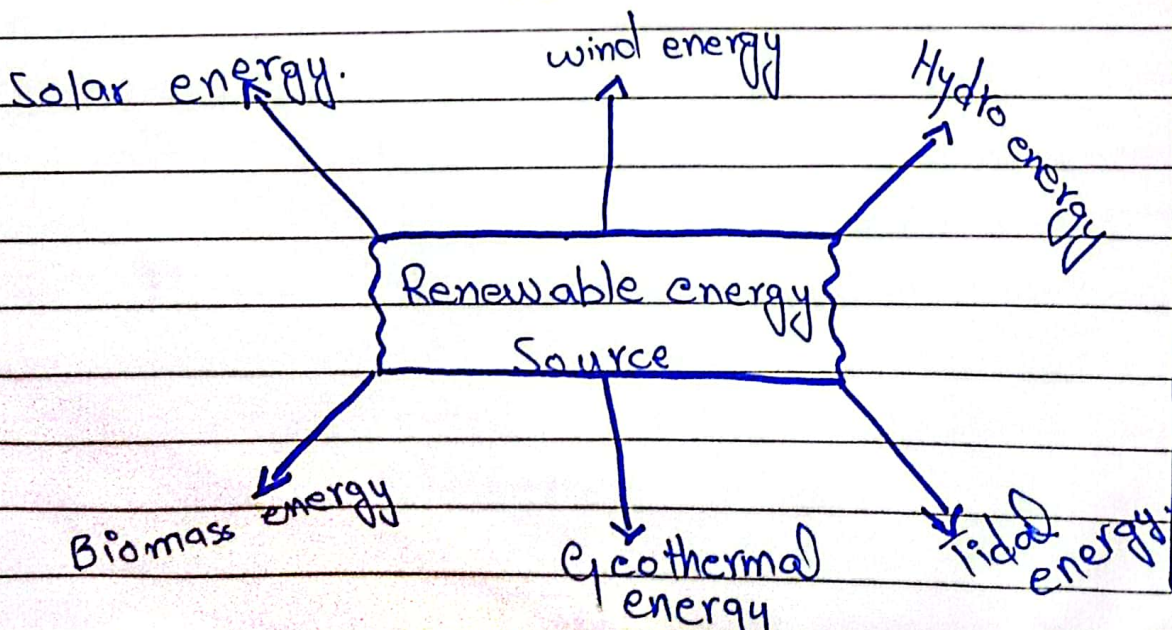
- 1- Non-Renewable sources.
- 2- Renewable energy sources.

"Renewable energy Sources."

Definition:-

"These are natural resources that can be replenished over time."

Renewable energy source include:



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### Solar energy:

- Solar energy generated by sun's rays.
- Pakistan has high immense potential of solar energy, particularly in regions like Punjab, Sindh.
- Projects like Quaid-e-Azam Solar park in Bahawalpur highlights the focus on harnessing solar power.

### Hydro power:

- Energy generated from the movement of water in rivers, oceans, and tidal currents.
- Notable projects are:
  - Tarbela Dam.
  - Mangla Dam.
  - Neelum-Jhelum projects.

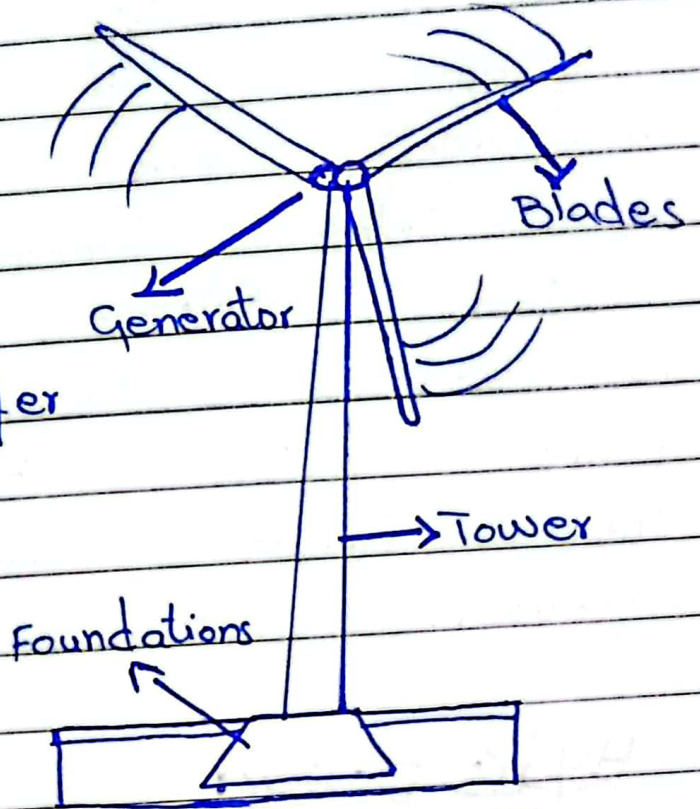
### Biomass energy:

- Agri. wastes, animal wastes, and other organic materials provide resources for biomass energy.
- Rural area can be benefited

significantly.

• Wind energy:

→ Coastal regions, particularly in Sindh and Balochistan, offer strong wind speeds suitable for wind energy generation.



• Geothermal energy:

→ Geothermal energy the heat of earth's core generates from activities like Sindh and Balochistan.

• Tidal energy:

→ Energy generated from the fall & rise of ocean waves. Tidal energy projects exist in the area of Sindh like Karachi.

## "Policy Options"

Policy options to utilize these sources and overcome present energy crises in Pakistan.

- Solar energy:

- Develop large scale solar parks.
- Introduce incentives of roof-top solar installation.

- wind energy:

- Develop wind farms.
- Offer feed-in tariffs for wind energy generation.

- Hydro energy:

- Install new hydro-power plants.
- Renovate the existing power plants.

- Geothermal energy:

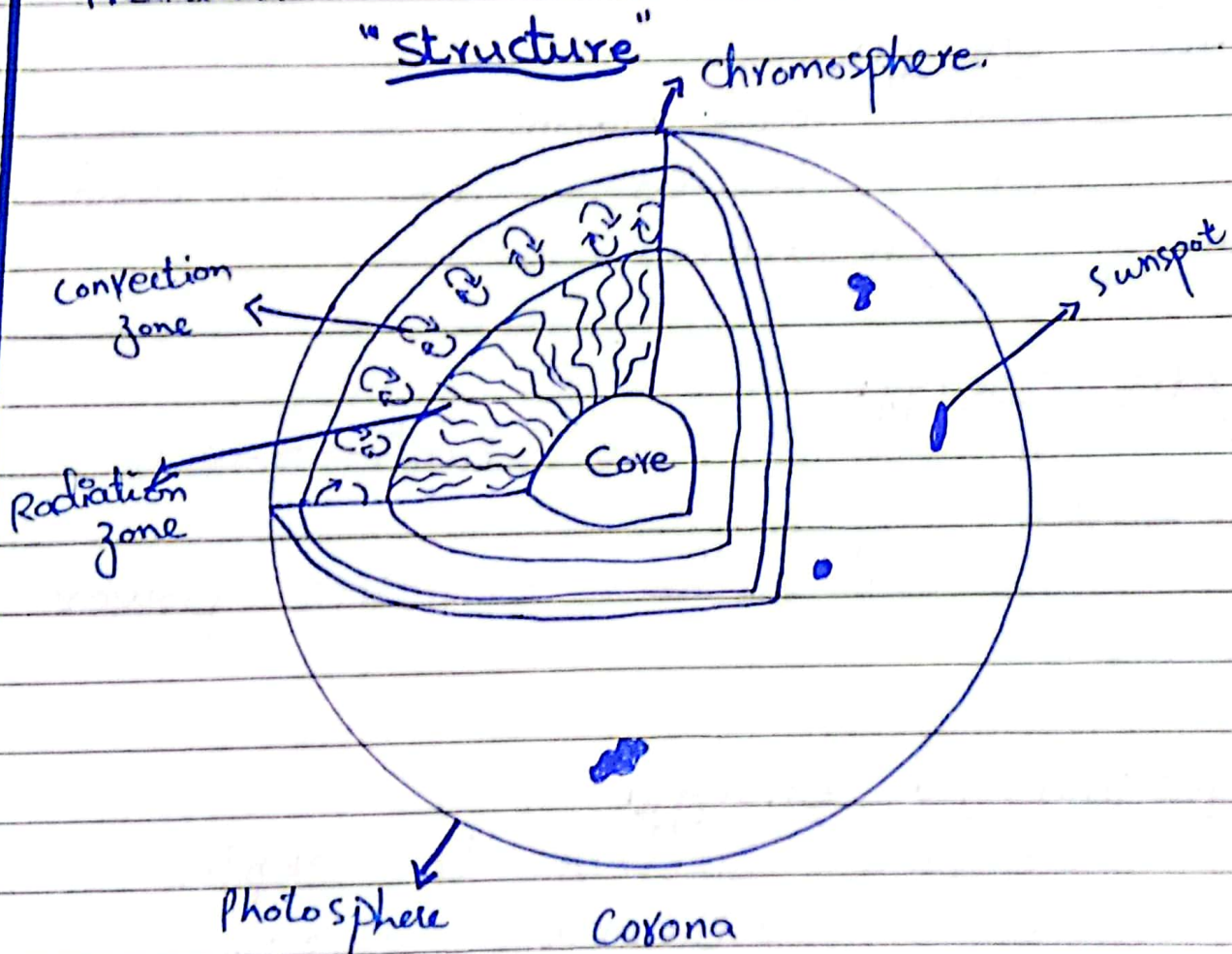
- Conduct surveys to explore potential geo-thermal areas.
- Install geo-thermal plants.

Tidal energy:

- Conduct feasibility studies for Tidal energy generation.
- Develop tidal power plants.

b- Explain structure of sun.

Sun is a massive ball of hot, glowing gas, composed of hydrogen & Helium.



## 1. Core:

The central region of Sun, making approximately 25% of Sun's radius, where nuclear reactions take place. Temperatures reach over 27 million degree Fahrenheit.

## 2. Radiative zone:

The layer just outside the core, where the energy generated by nuclear reaction transferred through radiation.

## 3. Convection zone:

The outer layer making about 70% of Sun's radius, where energy is transferred through convection current.

## 4. Photosphere:

The visible surface of the Sun (the layer we can see), with the temperature of around 5,500 degree Celsius.

### 5. Chromosphere:

A layer above the photosphere, visible during solar eclipses, with temperature ranging a few thousand to millions of degrees celsius.

### 6. Sunspots:

Cooler region on the photosphere, cause by intense magnetic activities.

### 7- Corona:-

The outer atmosphere of the sun, visible during solar eclipses.

#### Conclusion:

The sun structure is dynamic, with constant movements and changes in its layers.

(c) What is ceramic material? Is it possible to recycle it?

#### Definition:

"Ceramics are inorganic, non-metallic materials that are

created by heating clay to high temperatures".

### General properties:

- Ceramics are hard, extremely strong.
- Ceramics are durable, therefore are used in industries.
- Ceramics are non-magnetic but can have magnetic properties because they are containing iron oxides.
- Ceramics are having little elasticity.
- Ceramics are oxidation-resistant.

⇒ Is it possible to recycle Ceramics?

Yes, it is possible to recycle ceramics. Some ways to recycle ceramics are

### Professional recyclings

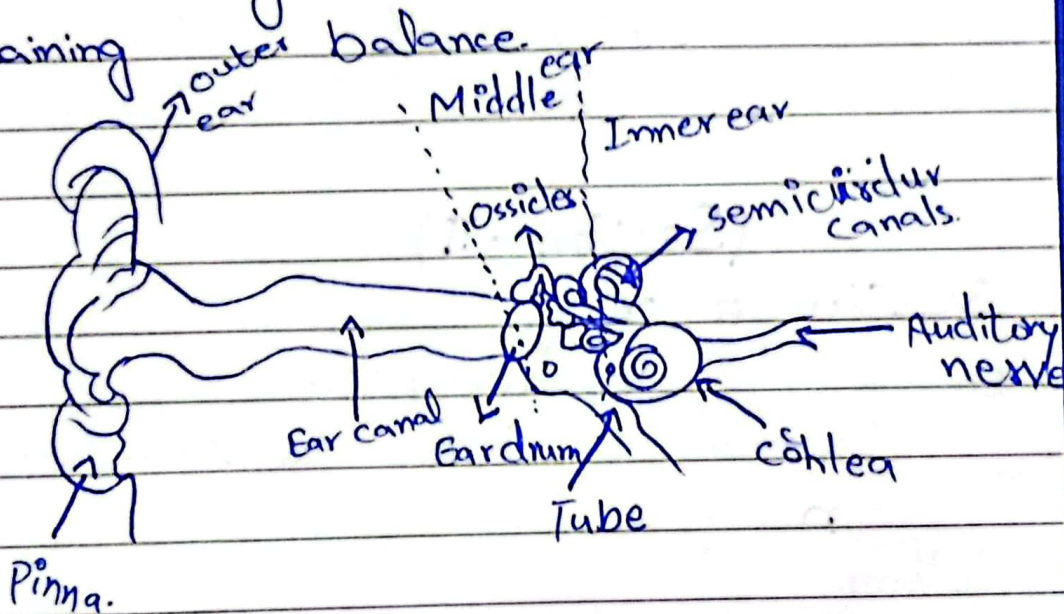
In commercial recycling center, they grind ceramics down and turn them into material that can be used in paving & drainage.



## Upcycles

Get creative to use old ceramics. Old ceramics can be used to fill a planter. We can also crush them and use them as a filler in post holes.

(d) Draw & explain structure of ear & also label its parts.  
Human ear is a complex and sensitive part responsible for detecting sound and maintaining balance.



### Outer ear:-

- Consisting of Pinna.
- Collect sound waves & directs them into the ear

cannal.

### Middle ear:

→ Contains three small bones that transmit sound vibrations to the inner ear.

→ An auditory tube connects ear to throat.

### Inner Ear:

→ Converts sound vibrations into electrical signals sent to the brain.

→ Inner ear consist of a complex system of inter-communicating chamber & tubes.

### (Section - II)

#### Question # 06:

(a) Original population = 18,000

Increased population = ~~22500~~ 22500 - 18000 = 4500

n = ?

Solutions:-

$$\text{Total percentage increase} = \frac{22500 - 18000}{18000} \times 100$$

$$= 2.5 \times 100$$

$$= 25\%$$

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Since the increase occurs in decades so we divide the total percentage increase by 10.

$$\text{Annual percentage increase} = \frac{25\%}{10}$$

$$n = 2.5\%$$

So population of village increases by 2.5% every year.

(b)

Data:

No. of units = 600 unit

No. of Days = 9 days, 12 Days

No. of machines = 20 machines,  
18 machines.

Solution:-

$$\text{No. of units made per day} = \frac{600}{9} = 66.67 \text{ units per day.}$$

No. of units made per day by per machine.

$$\frac{66.67}{20} = 3.33 \text{ units per machine.}$$

If factory has 18 machines,  
~~units~~ Days 12 days.

$$3.33\% \times 18 \times 12 = 719.28$$

$$\boxed{\text{Unit} = 720}$$

(c).

$$\text{Distance} = 450 \text{ m} \Rightarrow 0.45 \text{ km.}$$

$$1 \text{ minute} = \frac{1}{60} = 0.16667.$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{0.45}{0.16667} =$$

$$26.995 \rightarrow 27 \text{ km/h.}$$

$$\text{Now, Distance} = 69 \text{ km}$$

$$\text{min} = 45 \Rightarrow \frac{45}{60} = \frac{3}{4} \text{ h}$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{69}{(\frac{3}{4}) \text{ h}} = 92 \text{ km/h.}$$

Ratios:

$$= \frac{\text{Sp. of car}}{\text{Sp. of train}}$$

$$= \frac{27}{92} = \boxed{0.29} \rightarrow 0.3. \quad \#$$

0.3 : 1

$$(d) = \text{All sides of pentagone} = 15 \text{ cm}$$

$$\text{No. of side} = 5$$

$$= 5 \times 15 = 75 \text{ cm.}$$

$$\text{Parameter} = 75 \text{ cm.}$$

te: \_\_\_\_\_

### Question # 08.

(b)

Missing term = ?

$$1 \times 2 + 1 = 2$$

$$2 \times 2 + 1 = 6$$

$$6 \times 2 + 1 = 21$$

$$21 \times 2 + 1 = 43$$

Missing term is 43.

(c) → Walked from A to B = 10 feet <sup>to</sup> east  
→ Turned right ⇒ 3 feet to south  
→ Turned right again ⇒ 14 feet west.

Now, 10 feet East, then 14 feet South.

$$(10 - 14) = -4 \Rightarrow -4$$

→ 3 feet South

4 feet west.

Applying Pythagorean theorem.

$$\sqrt{a^2 + b^2} = \sqrt{(3)^2 + (4)^2} = \sqrt{9 + 16} = \sqrt{25} = 5 \text{ feet}$$

So, Naseer is 5 feet away from A.

(d): Average temperature =  $33^\circ\text{C}$

3 days =  $30^\circ\text{C}$

4 days =  $35^\circ\text{C}$

te: \_\_\_\_\_

First three days Average Temp:

$$\Rightarrow 30^{\circ}\text{C} \times 3 = 90^{\circ}\text{C}$$

And Last ~~four~~ <sup>three</sup> days:

$$\Rightarrow 35^{\circ}\text{C} \times 3 = 105^{\circ}\text{C}$$

Average temperature of week:

$$= 33^{\circ}\text{C} \times 7 = 231^{\circ}\text{C}$$

$$\text{Now} = 231^{\circ}\text{C} - (90^{\circ}\text{C} + 105^{\circ}\text{C})$$

$$= 231^{\circ}\text{C} - 195^{\circ}\text{C}$$

$$= 36^{\circ}\text{C}$$

temperature of 4<sup>th</sup> day is  
36°C.