

GSA.

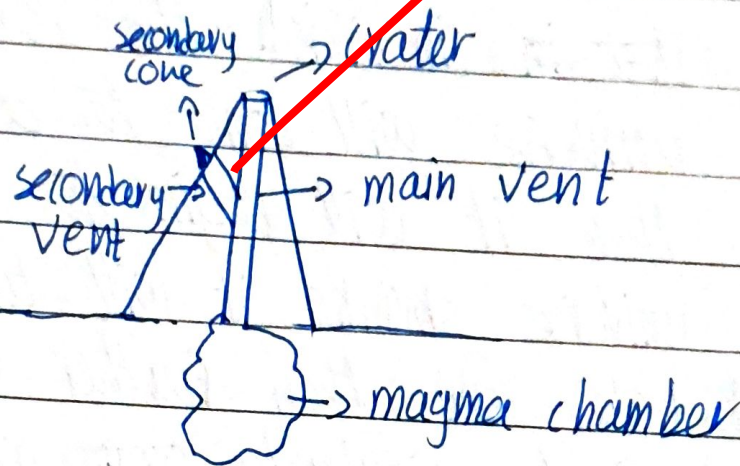
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(Q2) Volcanoes are basically mountains with hole/crater on the top. When the pressure at the bottom of a volcano increases, it causes lava inside magma chamber, it causes it to rise up and erupt from the crater [top hole in volcano]. The lava consists of molten rocks, debris, and metals.

Types of volcanoes:

- 1) Active volcano: These are the type of volcanoes that have caused eruptions, and will likely continue to do so.
- 2) Dormant volcano: These are the volcanoes that ~~are~~ have remained dormant for many years but might erupt in the future.

3) Extinct volcano: These are the type of volcano that have lost the ability to erupt. The pressure in the bottom [magma chamber] has decreased or completely ceased.



b) → Big Bang: Big Bang theory explains how the universe came into being. As per the theory the universe ~~start~~ was initially a single dense singularity. Then an explosion began and universe started to expand at the speed of light. According to this theory the universe is still expanding although the rate at which it is expanding is much

slower now.

→ Big Crunch: The Big crunch theory explains how the universe will come to an end. It is a hypothetical scenario ~~that~~ in which the expansion of the universe will come to an end ~~and~~ and then it will begin to reverse. As the universe ~~shrinks~~ it will turn into a black hole and then further shrink into a single singularity from which it first expanded.

→ How ~~univer~~ the age of universe is calculated.

Scientists have said that the universe is approximately 4.5 billion years old.

There are primarily two ways to calculate the age of the universe as under:

1) Expansion rate:

This technique encompasses measuring the expansion rate of universe to determine its age. Hubble constant is another name for this technique.

2) Finding the Age of the oldest star

Another technique is to find the age of the oldest star. Scientists have been measuring the age of billions of stars [globular cluster], to determine the age of different stars, which, in turn, helps them to determine the age of the universe.

3) Renewable Energy sources

Refers to the sources of energy production that can last indefinitely and do not have the risk of

running out like fossil fuels.

1) Solar Energy: Solar Energy is produced when sun rays strike PV cells which in turn produce electricity. These Photovoltaic cells convert solar radiations directly into electricity.

2) Hydel Energy: Hydel Energy refers to the energy produced by the flow of water. In this type of energy production, turbines are installed in a river where there is a flow of water.

The water flow rotates the turbines, which are connected to a generator.

As the turbines continue to rotate the generator produces electricity.

3) Bio fuel: Bio energy is produced when from living materials. Basically the matter undergoes anaerobic

reaction, where it is decomposed and broken into smaller matter in the absence of oxygen. The end result is biofuel which can be used to provide energy. ~~But~~ some common types of Bio Fuels include Biogas, Biodiesel.

4) Wind Energy: In this type of energy wind mills are installed in areas where there is a strong ~~current~~ air current. The air moves the wind mill, which rotates the turbine. As the turbine moves, electricity is created.

5) Geo-thermal Energy: specific areas are identified where there is a lot of pressure under earth's crust. The steam generated due to high pressure and radioactive decay is used to rotate a turbine, which is connected to a generator. The generator produces energy as the

turbine moves.

d) Optical fibers are strands of glass which are used to transmit data (Photons/energy packets) from one place to another. Optical Fiber consists of two parts:

Fiber

1) Core: Core is ^{at} the center of an optical fiber. It has a high density and a high refractive index.

2) Cladding: Cladding is the part that surrounds the core. It has a lower refractive index compared to a cladding.

Optical Fibers work through a phenomenon called total internal reflection. Total internal reflection occurs when angle of incidence

at which which refraction becomes equal to 90° . This keeps the data [photons] from ~~it~~ exiting the optical fiber and moves it from one place to another by reflecting it. ~~its~~

Q4)a) Solid ~~Man~~ Waste Management refers to the system of efficiently collecting and disposing waste in a way that it does not pollute or cause harm to the environment. Methods of SWM as as under:

- 1) ~~Source~~ collecting: This refers to the process where waste from households and commercial activities is collected.
- 2) Segregation: In an effective SWM the waste is segregated at the site of collection. This ~~it~~ means that plastic and glass will be

placed in sperate collection boxes ~~and~~
from general waste.

3) Treatment : some of the waste collected can be hazardous and must be treated before it can be disposed.

4) disposing : In this step the waste is disposed. Landfills are commonly used where ~~the~~ a hole is dug in the earth to dispose the waste. other common methods include incineration and open dumping.

b) Heart is a muscular organ responsible for pumping the oxygenated blood throughout the body and also sending deoxygenated blood to the lungs. Below is a step by step

process on how heart works:

1) ~~At~~ Contraction: The process starts ~~at~~ when the heart contracts. The two upper chambers know an Atria contract. The right atrium carries the deoxygenated blood while the left atrium receives the oxygenated blood from the lungs.

2) Blood shifted to Ventricles: The atriums which are the two upper chambers of heart shift the blood to the lower two chamber called Ventricles.

3) Deoxygenated blood sent to lungs: The right ventricle which received the deoxygenated blood to the lungs, so that it can be oxygenated.

- 4) oxygenated blood to the body: at the same time the left ventricle, which received blood from the left atrium, pumps the blood to rest of the body.
- 5) Relaxation Mode: After the blood is sent, the ~~of~~ heart goes into a relaxation mode.
- 6) Contraction: After that the heart contracts and the same process begins again. The right atrium receives ~~to~~ deoxygenated blood from the organs, while the left atrium receives oxygenated blood from the lungs.
- c) Myopia: AKA short sightedness, refers to the situation where the eye cannot clearly spot objects at a distance while the objects

near the eye are clearly visible.

This happens when the shape of the eye causes the light rays to bend (refract) inaccurately. A possible treatment would be ~~a~~ concave lens which can diverge a straight light beam ~~and~~ from the source to a diminished, upright straight light beam.

Hyperopia: AKA farsightedness, is a common vision condition where the object at a distant can be seen clearly while but the object near to the eye appear blur. A possible treatment would be convex lens which concentrates light rays when they pass through the lens.

Major Parts of Eye:

- 1) Retina
- 2) Cornea
- 3) Iris
- 4) Pupil
- 5) Sclera
- 6) optic Nerve.

Date: _____

d)

Micro wave	Ultra Violet	X-Rays
→ Communication	→ Killing bacteria	→ Detects
→ remote sensing	→ Phototherapy	bone fractures
→ Heating	→ Suntanning	→ Detect tumors
→ cooking	→ curing snks	→ pneumonia
→ Radars	→ curing resins	→ dental problems
→ radio-astronomy	→ creating fluorescent	

Section II

(Qb a) Total votes : $10000 + 15000 + 8000$
 $= 33000$

Percentage of winning candidate.

$$\Rightarrow \frac{15000}{33000} \times 100$$

$$\Rightarrow 45.45\%$$

→ Hence winning candidate received 45.45% of the total votes.

b) 3 : 4 : 5 Total distribution
Find each Angle.

$$3 + 4 + 5 = 12$$

$$12 = 180$$

Unitary method to find each angle.

To find 3:

$$12 : 180$$

$$3 : x$$

$$12x = 180 \times 3$$

$$x = \frac{180 \times 3}{12}$$

$$\Rightarrow 45 \rightarrow 3 \rightarrow 45^\circ$$

To find 4

$$12 : 180$$

$$4 : x$$

$$x = \frac{180 \times 4}{12} \rightarrow 4 \rightarrow 60$$

$$5 = 180 - [45 + 60] \Rightarrow 75$$

Hence three angels are

$$3 : 45$$

$$4 : 60$$

$$5 : 75$$

(c) 1 Group = boys: 4

girls: 6

→ Boys to girls ratio for each group: 2:3

Hence boys will be:

$$3 : 120$$

$$2 : x$$

$$3x = 240$$

$$x = \frac{240}{3} \Rightarrow 80$$

Hence 80 boys are needed.

Q8

~~Q~~ (u) Three consecutive numbers

$$x + x + 2 + x + 4$$
$$= 3x + 6$$

$$3x + 6 = 273$$

$$3x = 267$$

$$x = 89$$

Hence 3 consecutive numbers are:

89, 91, 93

- ~~Q~~ (c) (i)
(ii) GARDEN
(iii)
(iv) LONDON
(v) HOLIDAY