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GENERAL SCIENCE AND ABILITY.

PART II

SECTION-1

Follow step by step method for math solutions
Draw diagrams for competitive edge
Write complete answer to the question

Q3 a) Explain and draw ... Sun.

Ans:

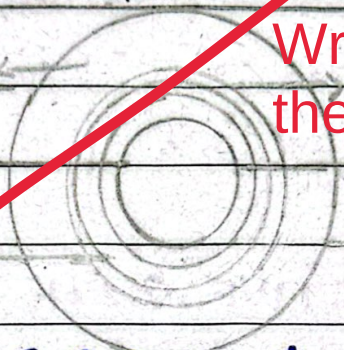

DIAGRAM - 1.

The structure of the sun is divided into 2 parts. describe below:

i PHYSICAL STRUCTURE.

The physical part of the sun consist of 3 portions:

2. THE CORE:

The core is the middle most part of the sun. This is the place where nuclear fusion takes place (The proton atoms of hydrogen starts fusing

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into helium). This is the densest part of the sun. Nuclear fusion is an exothermic process that releases high amount of energy into the outer layer of the ~~Earth's~~ sun's surface.

2. RADIOACTIVE ZONE:

When most of the hydrogen atom fuse into helium, then the core gets empty and radioactive reaction starts taking place here, releasing the energy outwards and increasing the size of the sun. changing it main sequence star to a red giant star.

3. CONVICTION ZONE:

The convection zone is the 3rd part of the

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the suns physical structure. This is the last layer of the sun's physical form, after this the layers of the atmosphere comes. The convection zone transfers the energy of the sun from the physical portion to the atmospheric portion.

ii. ATMOSPHERIC PORTION:

1. PHOTOSPHERE:

This is the inner most layer of the sun's atmosphere. The temperature here rises to 6000°C, the further it goes the hotter it gets.

2. CHROMOSPHERE:

The chromosphere is the 2nd last part of the sun's atmosphere and is

further divided into 2 portions.

- **INNER CHROMOSPHERE:**

This is the inner part of the chromosphere. The temperature here is 4000°C, it is lower than the photosphere because most of the energy is radiated outwards.

- **OUTER CHROMOSPHERE:**

The outer chromosphere is the last part of the sun's chromosphere. The temperature here is 10000°C.

3. **THE CORONA:**

The corona is the outer most layer of the sun's structure,

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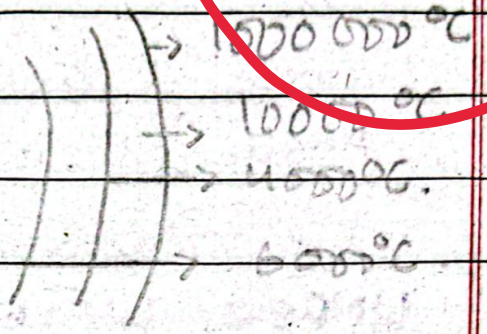
With a temperature of 10 000 000 °C. This portion emits light and heat to the solar system. Solar winds are also a reason of this corona.



b. What is a tsunami?...

Tsunamis.

Ans. **TSUNAMIS:**

Tsunamis are waves of water that get deadly as they come close to the costal area. They can cause significant damages to human life, environment and buildings. These waves might seem small in the ocean but get extremely

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dangerous as they come closer to the coast.

GENERATION OF TSUNAMI:

Tsunamis can be generated by any of the following reasons.

1. Under water Earth Quacks.
2. Volcano eruption.
3. Land sliding.
4. Asteroid collision.

1. UNDER WATER EARTH QUACKS.

When an Earth quack takes place under water, it creates disturbance from beneath causing ripples and waves in the water, these grow larger as the water gets shallow.

2. VOLCANO ERUPTION:

Underwater volcano eruption can also

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cause devestating and catastrophic Tsunamis killing millions.

3. **LAND SLIDING:**

Underwater land sliding can also be the reason behind the generation of Tsunamis.

4. **AESTEROID COLLISION:**

Acsteroid collision can also be a reason and some Tsunamis have been a result of asteroid colliding with the ocean.

A tsunami generated by anyone of these reasons can cause damages. The waves of Tsunami can accelerate to a speed of 500 - 800 km/h.

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EXAMPLES:

1. A tsunami in Japan, caused by 9.1–9.3 magnitude Earthquake causing the death of over 150,000 humans along with disappearences and temporary movements of people.
2. A tsunami in Indonesia, triggered by a 7.0 magnitude Earthquake resulting in the death of more than 15000 people.

c. Discuss environmental . . . . . emb it.

Ans. ## ENVIROMENTAL POLLUTION:

Environmental pollution can be any type of pollution that harms, deteriorate or destroys the environment in any kind of

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way. This pollution can disturb the peace of the environment of or change its cycles. This can cause serious harm to plant life, animal life and human life as well. Climate change, Global warming, volcanic eruption, droughts, heavy rainfall, change in the timing of winter and summers and floods can be a result of environmental pollution.

HARMFUL EFFECTS OF ENVIRONMENTAL POLLUTION.

Air pollution, Water pollution, Noise pollution are the major types of environmental pollution that can result in very harmful ways for all life life forms.

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2. Air pollution is a result of the harmful gases that are released by cars, factories and industries. Chloroflouro Carbons are the major culprit of causing air pollution damaging the ozone layer. Smog is the example of the harmful effects of air pollution that recently caused a lockdown in Lahore, where the AQI (Air quality index) went near 2000, 70% more than the World health organization standards. This caused serious Health issues for people living in Lahore and Delhi.

2. Water pollution is the result of garbage and the

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harmful chemical substances disposed of into the sea, rivers, lakes and oceans. This can cause serious health issue for humans as well as the marine life.

3. Noise pollution is the result of any type of noise that disturbs the peace of the environment.

MEASURES TO CURB ENVIRONMENTAL POLLUTION:

Several measures can be taken to solve the problem of environmental pollution given below.

1. Recycling.
2. Proper disposal of garbage.
3. Setting a standard for vehicles (Vehicles emitting gases

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should not be allowed to roam around).

4. Factories and industries should not be allowed to dispose of harmful substance into water.

5. Strict actions should be taken against countries that do not follow the kyoto protocol.

d. What is wireless ... ... satellite.

Ans: **WIRELESS COMMUNICATION:**

Wireless communication is a gift of science to humanity. Wireless communication is the transmission of information between devices without the uses of wires. Information is transmitted in the form of electromagnetic waves.

TYPES:

1. GPS.
2. Bluetooth.

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3. Satelite communication.
4. Radio signals.
5. Military equipments.

WORKING OF A SATELITE:

There are 2 types of satelites.

1. Natural satelites.
2. Artificial satelites.

1. NATURAL SATELITES:

Natural satelites as the name indicates are naturally forming. Natural satelites are the moons that revolve around the planet. In one solar system, different planets have different number of satelites.

1. Mercury —> None.
2. Venus. —> None
3. Earth. —> 1 (Moon).
4. Mars: —> (2)

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5. Jupitar → 72 moons.
6. Saturn → 68 moons (Titan).
7. Uranus. →
8. Nephine. →

2. ARTIFICIAL SATELITES:

Artificial satelites are human made satelites. They revolve around the Earth and other planets in an orbit.

A specific speed is needed for them to reach the point where the centrifugal force of the planet makes them revolve around a planet. Different speed is needed for different

satelites orbiting different planets. Escape velocity is the velocity needed for the satelite to escape the gravitational field of Earth.

DIFFERENT TYPES ACCORDING TO THEIR FUNCTION.

1. Acio centric. (orbits around the planets)
2. Geo centric (orbits around Earth).
3. Helio centric (orbits around sun).

The 'international space station' is the biggest satelite till date to orbit Earth.

Sputnik 1 and 2 are the 1st and 2nd satelite launched by the Russians in space.

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25. **Differentiate b/w ... cell.**

Ans: Following are the differences between a prokaryotic and Eukaryotic cell.

	PROKARYOTIC:	EUKARYOTIC:
1.	Most in single celled organism.	Can be in single and multi celled organism.
2.	Are smaller in size	Are larger in size.
3.	No membrane bounded organele.	Has membrane bounded organels.

	Lacks mitochondria	Has mitochondria.
4.	Smaller no. of ribosomes (700)	Bigger/Large no. of ribosomes (800)
5.	Has no nucleas	Nucleas is present.
6.	Cell division is through binary fission.	Cell division is through mitosis.
7.	Present in bacteria.	Present in plants and animals.

b. What is global warming?
What is Kyoto protocol?

Ans. **GLOBAL WARMING:**

Global warming is the rise of temperature of Earth. This is the result of ozone layer depleating because of air pollution. The world is on the verge of 2.6°C rise in temperature this century and double that in the next century. Global warming disrupts the system of environment and can have devastating and catastrophic effects on the world. The direct UV rays from the sun can have very bad impacts on Earth. Global warming is not a term interchangable with climate change, - this is basically due to human

activities primarily fossil fuel burning which increases heat trapping and green house gas levels in Earth's atmosphere. CO_2 and other green houses gases trap heat in the Earth's atmosphere.

KYOTO PROTOCOL:

Kyoto protocol was an international treaty that was signed by different countries in Kayoto, Japan on 11th of December, 1997 and was entered in to force on 16th February of 2005.

The Kyoto protocol applied to the seven green house gases, some of these GHG are:

1. CO_2 (Carbon dioxide).
2. N_2O (Nitrous oxide).
3. CH_4 (Methane).
4. HFCs (Hydro Flouro carbon). etc.

The purpose of the treaty was to keep the level of these gases below the levels in 1990.

The 1st phase of the kyoto protocol was from 2008 - 2012, although it failed to reach its objective because countries like China and India (the largest GHG emitters) were considered in

developing countries and not developed. This was a big disadvantage to countries like USA, UK and Russia. But the Kyoto protocol set the path straight that global warming is a present threat to humanity which should be dealt with.

c. Write .. GIS.

Ans: **GEOGRAPHIC INFORMATION SYSTEM (GIS):**

GIS stands for geographic information system, which is a computer system that displays data about the Earth's surface. GIS can show multiple types of data on maps. Such as maps, buildings, streets and vegetation, which helps people understand patterns and relationship.

This consist of integrated computer hardware and software system that captures, stores, analyses, and then displays different 3D (three dimensional) pictures.

1. Briefly ... antioxidants.

ANTI OXIDANTS:

Anti oxidants are free radicals compounds that prevent oxidation. A chemical reaction that can creat free radicals. Free radicals can damage cells and can lead to many life threatning diseases. Some of these diseases are:

2. Cancer.
2. Heart disease.

Some examples of anti oxidants include.

EXAMPLE:

1. Vitamin - E.
2. Vitamic - C.
3. Beta - Carotene.

Different foods are rich in anti oxidants. Such as

1. Fruits.
2. Vegetables.
3. Nuts.
4. Seeds.
5. Herbs. etc.

Anti oxidants are also used in industries to increase the shelf life of products like fuel, lubricants and polymers.

SECTION - II

Q3. Distinguish ... EQ

	INTELIGENCE QUOTIENT.	EMOTIONAL QUOTIENT.
1.	Intelligence quotient is the intelligence level of a person.	Emotional quotient is the the emotional capability of an human.
2.	The higher the I.Q is in numbers, the more intelligent a person is.	The higher the E.Q the more emotional a person is?
3.	The ability of a persons reasoning.	The ability to understand, use and manage your emotions.

b. What is ... back?

Sol: Age of Aman = x.

Age of Aman after 20 years.

So, $(x+20)$ is age 10 yrs back.

Age will be 10 times T so,

$10(x-10)$.

$x + 20 = 10(x-10)$

$x + 20 = 10x - 100$.

$x = 10x - 100 - 20$

$x - 10x = -120$.

$\frac{-9x}{-9} = \frac{-120}{-9}$ $\quad x = 13.3$ years

So,

The age of Aman will be 13.33 years.

c. Pete . . . together .

SOLUTION:

Work rate problem.

Pete = $\frac{1}{40}$.

John = $\frac{1}{60}$

adding these .

$= \frac{1^{\times 3}}{40 \times 3} + \frac{1^{\times 2}}{60 \times 2}$

$= \frac{3}{120} + \frac{2}{120} = \frac{5}{120}$

So the time required to mow 1 Lawn is $\frac{5}{120}$.

$= \frac{1}{5/120}$ 5.

$= \frac{120}{5}$

= 24 minutes.

It will take 24 minutes to mow a lawn together.

Qc. If ... ?

Sol: $a + b + c = 15$ → (1)

$b + c = 12$ → (2)

$b - c = 2$ So, $b = c + 2$ → (3)

put eq (2).

$(c+2) + c = 12$

$2c = 10$ $\quad c = 5$

Now put c in eq (3).

$b = 5 + 2 = 7$.

put all the values in eq (1).

$a + 7 + 5 = 15$

$a = 15 - 12 = 3$

$a = 3$, $b = 7$, $c = 5$.

So, the 3 digit number is 375.

c. Diameter ... circle.

Sol: Circumference = $\pi \times$ diameter

Area = πr^2.

Diameter = 6 m.

So, Circumference = $\pi \times 6 = 6\pi$ or

$= 6 \times 3.14$

$= 18.84$ m

Area = πr^2.

Diameter = 6 so for finding $r = \frac{6}{2}$.

radius = 3 m

Area = $\pi \times (3)^2$

$= 9\pi$ or $= 9 \times 3.14$

$= 28.26$ cm^2.

d. Identify the numbers.

Sol: 13, 24, 46, 90, 178, 354.

11 +11 22+22 44+44 88+88

5, 6, 9, 14, 21, 30.

1 3 5 7 9