

General Science and Ability

Section A:

A 3

Global Warming:

(a)

Global warming is the gradual increase in Earth's temperature due to the emissions of green house gases by both natural and factors generating by human actions.

The main green house gases which result in escalating global warming are:

- 1) Nitrogen: Nitrogen where produced by atmospheric reasons like volcano eruptions, lightning but it is produced more by human activities like
 - 1) Burning of fossil fuels
 - 2) Many industries of steel, cement etc produce Nitrogen
 - 3) vehicle emissions
- 1) Also Nitrogen is used in chips packet which ^{prevents it} making food soggy.

- 2) Carbon Dioxide: It is ~~rela~~ released by humans and consumed by plants but still it is in atmosphere. It is also produced by fuel combustion processes, industrial activities and natural gas processing.

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3) Methane:- It is released naturally through the pockets inside the Earth. Also rice fields also generate large amounts of methane during plant growth.

4) HCFs and HCFC:- These are produced from industrial processes violating the environment.

All these gases are escalating global warming.

How to reverse?

Global warming cannot be reversed completely however we can reduce it. Some of the ways to reduce it includes:-

1) Avoiding burning of fossil fuels:-

Most of the gases are result of the burning of fossil fuels therefore, if we avoid this burning ~~problems~~ we can reduce the issue.

2) Reforestation:

It can majorly help in reducing global warming. Growing more plants will help carbon dioxide to decrease resulting in less remains in the environment; therefore, reforestation

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helps in reducing the global warming.

3) Renewable Energy Usage:

By using renewable energies instead of relying on renewable, will reduce this problem. Like using solar energy, hydropower and wind energy will decrease reliance on imported fuels.

4) Reduce waste:

By avoiding burning waste can help in this problem. Instead reuse or recycle the waste or instead of burning dumping is better. Avoid use of plastics will also play a big role in reduction of global warming.

5) Sustainable Practices:

Sustainable environment growth can be achieved by sustainable practices. Industries should control the pollution they are causing so that reduction is more easier. Using energy efficient appliances will help to resolve the problem.

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(b)

Ceramics:

Ceramics are usually non-metallic elements produced by heating on high temperatures and then cooling them. For e.g. Pottery, bricks, tiles, aerospace and medical implants etc.

Properties:

Ceramics are

1) Hard:- They are very hard that only by heating them they can be moulded into shapes.

2) Brittle:- They break easily under tension.

3) Heat Resistant:- Only withstand on high temperatures

4) High melting point: Ceramics have very high melting point - Only on high temperatures moulding is possible.

Application:

Ceramics have many applications.

1) Pottery:- Plates, cups and bowls are made from it.

2) Construction material:-

Bricks, Tiles, roof tiles all are made from ceramics.

3) Medical use:

Artificial bones, surgical tools etc are made from ceramics.

4) Aerospace and Automotive.

Heat shields, engine components and blades are made from ceramics.

(c) Optical fibre:

It is a thin strand of glass or plastic that carries light over long distances.

Mechanism:

It works on total internal reflection. Following are the steps of mechanism:-

- 1) Light enters the fiber at one end
- 2) The fibre has a core and a cladding
- 3) When light enters the ~~core~~ boundary between core and cladding, it reflects back instead of escaping hence by converting in an electrical signal.

For e.g.: Internet and broadband connection, cable TV etc.

2 Mobile Phone:

Mobile phone works on radio waves.

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Steps:-

- 1) When we speak our voice is turned into digital signals.
- 2) These signals are sent as radio waves to the network.
- 3) The network sends them to the other phone where it is converted into sound again.

(d) (i) →

(d) (ii) Food Preservatives:

Food preservatives are chemicals used in food/drinks so that they can be stored for a long time. It is injurious to health but still works and is used to preserve many food items.

- Natural Preservatives:

Natural preservative include salt, vinegar, sugar that are used in many things. For example sugar is added to fruit ^{or ju} puree to preserve that fruit for a long time like strawberries.

- Artificial Preservatives:

There are artificial chemicals used to store food like: Sodium Benzoate, Nitrous oxide, Nitrogen. Nitrogen is used in chips packet.

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to prevent them from soaginess.

(i) Food Additives:

Food additives are ^{chemicals} used and substances used in food to make or enhance its taste, smell, presentation more tempting, attractive and tastier. Unlike preservatives which helps in preserving food, additives help in making it good.

For example:

- 1) Sodium Benzoate - used in soft drinks and soda.
- 2) Salt - used in pickles for taste and preservation.
- 3) Coloring agents - makes food attractive and more tempting.
- 4) Food enhancers - Improves the taste of food like caramel used in wide range of food products.

iii Food Adulteration:

Food Adulteration refers to adding injurious chemicals or substances intentionally or unintentionally in food.

Intentional:

Intentional food Adulteration

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means by purpose adding something for personal gain.
for example adding water into the milk.

Unintentional:

It refers to mistakenly add something into the food not to harm anyone but unintentionally doing it.
for example - Dust and dirt entering into foods.

Also, sometimes using pesticides and herbs result in dropping some in food.

Food Contamination:

Refers to when food is unsafe or harmful to consume as it is contaminated with harmful substances.

for example:

- 1) Mold on bread can cause diarrhea and food poisoning.
- 2) Pesticides or chemicals left on fruits and vegetables.
- 3) Cleaning chemicals left on surfaces where our hands touch and we use hands for many purposes so it is also harmful.

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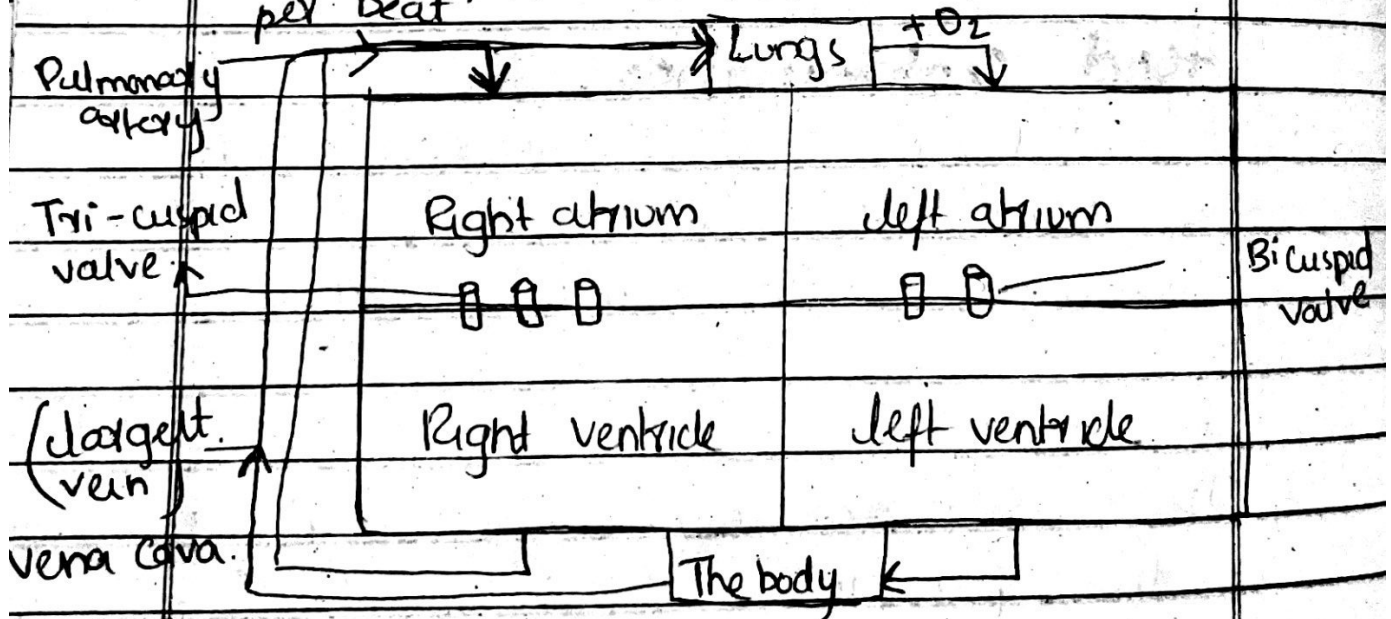
A4 Role of heart and Blood vessels

1) Heart:-

Heart is a fist sized organ that pumps blood through the body - It pumps 2000 gallons (7600 Litres) daily - and beat 100,000 times daily - It has four chambers.

- 1) Right atrium
- 2) Left atrium
- 3) Right Ventricle
- 4) Left Ventricle.

Heart beats 72 times per minute and 1 heart beat is equivalent to 0.8 sec per beat.



The right side (ventricle) gets deoxygenated blood which is pushed by the chamber into the lungs where it is oxygenated and pushed into the left atrium where it passes by bicuspid valve into the left

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ventricle then to the whole body.

After the body gets blood it is returned to the heart by Vena Cava which is the largest vein to the right atrium of heart.

Blood vessels:

Blood vessels consists of 3 main things

- 1) Arteries which ensures blood reaches every part of the body.
- 2) Veins: carry blood back to the heart
- 3) Capillaries: tiny vessels which connects arteries and veins.

The heart pumps, the arteries carry oxygenated blood and capillaries provide a path to it.

All three result in circulation process.

2. Cyclone:

It is a large scale system of winds that rotates around a low pressure center. There are two ~~three~~ types of cyclones

- 1) Tropical cyclones.
- 2) Extra Tropical cyclones: for e.g.
Hurricanes (happening towards west)
Typhoons (happening towards east)

Formation

Cyclone is a weather system with a low atmospheric pressure at its center, around which air circulates in counter clockwise (Northern hemisphere) and clockwise (Southern hemisphere) usually accompanied by violent storm and bad weather.

3- Functions of:

• Carbohydrates:-

- Main source of energy for the body
- Breaks down ^{into} glucose which fuels cells and tissues.
- Source Rice, wheat, fruits etc.

• Proteins:

- Build and repair body tissues; essential for growth.
- Make enzymes
- Boost hormones
- Source - fish, meat, milk.

• ~~Calc~~ Calcium:-

- strengthens bones and teeth
- Important for muscle contraction and blood clotting
- Source - milk, cheese, yoghurt:

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- Fats:-

- Provide long term energy
- Insulate and protect organs.
- Help absorb fat soluble vitamins (A, D, E, K)
- Source - Oil, butter, nuts, seeds.

- Iron:-

- Helps in making hemoglobin, which carries oxygen in blood.
- Source - Apples, Red meat etc.

d) Remote Sensing:-

Remote sensing refers to collecting information about the Earth's surface without direct contact usually via satellites, drone or aircraft.

How can it be done?

1) Monitoring Deforestation:-

Satellites can be used to detect deforestation - through it we can assess forest's degradation to cater the problem.

2) Climate change:

Through remote sensing we can detect temperature, sea surface levels which can help scientists and weather forecasters.

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3) Pollution Detection:

It can also be used to detect most polluted areas so that they can be cured before the environment gets more worse.

4) Disaster Management:

We can detect disasters like earthquakes to timely be prepared for it and take safety measures pro actively.

5) Water Resources:

Satellites help in detecting the water levels so it can be used to mark and locate places that have low sea levels or scarce water resources to solve the problem.

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Section (B)

MATHS

Ans 7. (A)

Data:-

Let one number = x

Let another number = y .

40% of $x = \frac{2}{3}$ of y

Ratio of x to $y = ?$

Solution:-

$$40\% \text{ of } x = \frac{2}{3} \text{ of } y$$

$$\frac{40}{100} \text{ of } x = \frac{2}{3} \text{ of } y$$

$$\frac{2}{5} \text{ of } x = \frac{2}{3} \text{ of } y$$

$$\frac{2x}{5} = \frac{2y}{3}$$

$$6x = 10y$$

Divide it by 2.

$$3x = 5y \quad \text{--- (i)}$$

Ratio of $x : y$

$$= 5 : 3 \quad \text{Ans.}$$

(B) Data:-

Selling price = Rs 720

Total no of ball = 17

Loss = cost price of 5 balls.

Cost price = ?

Solution:- let cost price of a ball = x

let cost price of 17 balls = $17x$

cost price of 5 balls = $5x$

$\therefore$ Selling price = Cost Price - Loss

$$720 = 17x - 5x$$

$$720 = 12x$$

$$720 = x$$

$$12$$

$$60 = x$$

The cost price of a ball = 60.

C) Data:-

let present age of son = $x \rightarrow x+2$

Present age of father = $x+24$ yrs

In 2 yrs father's age will be twice the son's age = $(x+24)+2$

Solution:

$$(x+24)+2 = 2(x+2)$$

$$26-4 = 2x-x$$

$$22 = x$$

The present age of son is 22 yrs.

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D) Data:-
Rashid = 32 pages in 6 hrs = $\frac{32}{6} = \frac{16}{3}$ pg/hr.

Kamran = 40 pages in 5 hrs = $\frac{40}{5} = 8$ pg/hr

Time to type 110 pg = ?

Solution:-

Combined rate of Rashid and Kamran
= $\frac{16}{3} + 8$

converting 8 into fraction
= $\frac{16}{3} + \frac{24}{3} = \frac{40}{3}$ pg/hour.

Time = $\frac{\text{Total pages}}{\text{combined rate}}$

$$= \frac{110}{40/3} = 110 \times \frac{3}{40}$$

$$= \frac{330}{40} = 8.25 \text{ hrs.}$$

They will take 8 hours and 25 mins
to type 110 pages.

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(A)

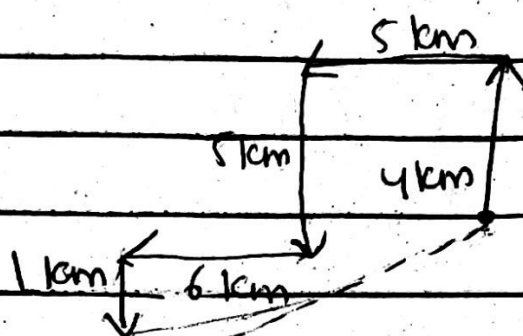
Data:

5 different house A, B, C, D, E

D	B	A	E	C
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Therefore, A is in the middle of the row.

(B)



-) 1 km away from starting point.
-) Direction while finishing is North will be
-) Direct after second return ~~will be~~ South.
-) I have to run to west to reach the point I started.

(d) (e) →

There are 18 triangles in the image.

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(C)

Odd me out:

KTRIS is the odd me

11 20 18 9 19