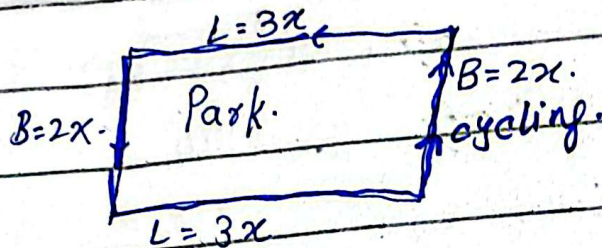


Question - 6

(A)

According to the statement, the woman's granddaughter is the daughter of Ahsan's brother. It means that woman's granddaughter is Ahsan's niece. Thus, the woman, who is granddaughter of Ahsan's niece, is also the great granddaughter of Ahsan.

(B)



Given:- Ratio of length and width = $3:2$.

So, the length = $3x$ and breadth = $2x$.

- speed = $12 \text{ km/hr} = 12000 \text{ m/60 minute} = 200 \text{ m/minute}$
- Time = 8 minutes

To find: Area of park = Length $\times$ width.

Formula solution.

$$\text{speed} = \frac{\text{distance}}{\text{Time}} \Rightarrow \text{Distance} = \text{speed} \times \text{Time}$$

$$\text{Distance / total perimeter} = 200 \times 8 \text{ (m)} \\ = 1600 \text{ m.}$$

$$\text{Perimeter} = L + L + w + w.$$

$$1600 = 3x + 3x + 2x + 2x$$

$$1600 = 10x \Rightarrow x = 160$$

It means, length = $3x = 160 \times 3 = 480\text{m}$.

$$\text{Breadth} = 2x = 2 \times 160 = 320\text{m}$$

$$\text{Area of park} = (480 \times 320)\text{m}^2 = 153600\text{m}^2$$

(C)

Given: Two digit number, let it be xy x is unit digit and y is decimal digit.

According to statement, $x = 2y$.

$$\text{So, the number} = xy = (2y)(y) = 2y^2$$

second condition.

$$(xy) \times (x+y) = 144 \Rightarrow (2y^2) \times (2y+y) = 144$$

$$2y^2 \times (3y) = 144 \Rightarrow 6y^3 = 144$$

$$y^3 = \frac{144}{6} \Rightarrow \sqrt[3]{y^3} = \sqrt[3]{24}$$

$$y = 2.3$$

$$x = 2y, \text{ then } x = 2 \times 2.3 = 4.6$$

It indicates that number is 42 .

(D)

Ratio = $2:3 \Rightarrow$ so, the numbers will be $2x$ and $3x$.

If $x = 7$, then the numbers will be $2(7) = 14$ and $3(7) = 21$.

As L.C.M = 48, so.

$$\begin{array}{r|l} 16, 24 & \\ \hline 2 & 8, 12 \\ \hline 3 & 4, 8 \\ \hline & 2, 4 \\ \hline & 1, 2 \\ \hline & 1, 1 \end{array}$$

$$8 \times 2 \times 3 = 48$$

So, the sum of number is

$$16 + 24 = 40$$

Q.7.

(A)

$$\frac{40}{100}(x) = \frac{2}{3}y$$

According to the given condition, two numbers are x and y simultaneously.

So,

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

$$\frac{40}{100}(x) = \frac{2}{3}(y)$$

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

$$\frac{2 \times 100}{3 \times 40}$$

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

So ratio of first to second number is

$$\frac{5}{3}$$

(B)

Loss = Cost price

- Sale price.

=

Suppose, the age of man = x

The age of man's son = y

According to given statement.

$$x = y + 24 \quad \text{--- (1)}$$

Making table.

Past Age	Present Age	Future age.
	Man = $x = 24 + y$	$x + 2 = 2y$
	Son = $y = ??$	Son = $y + 2$
	To find.	

$$x + 2 = 2y$$

Placing the value of x from (1)

$$(y + 24) + 2 = 2y$$

$$y + 26 = 2y$$

$$26 = y$$

So, the son's present age is 24 years.

(D)

Time taken by Rashid to complete type

32 pages = 6 hours.

In 1 hour Rashid will type = $\frac{32}{6}$
= 5.3 pages.

Time taken by Kamran to type 40
pages = 5 hours.

In 1 hour Kamran will type = $\frac{40}{5}$
= 8 pages.

If they work together for 1 hr,
they will complete:

$$\frac{1}{5.3} + \frac{1}{8} = \frac{8 + 5.3}{42.4} = \frac{13.3}{42.4}$$

$\frac{1}{4} =$ pages completed by both.

pages completed by both in 1 hr = 4 pages.

Time to complete one page = $\frac{1}{4}$ hour.

For 110 pages = $\frac{110}{4} = 27.5$ hours.

Thus, 27.5 hours will be required
to complete 110 pages.

Q. 3. Section - A

Q. 3.

(A).

Global warming:

It is a long-term and gradual
increase in the temperature of
earth mainly due to human
activities.

How Global warming can
be prevented? Reversed?

(i) By shifting to green sources
of energy:

currently, CO₂, CH₄ (methane) and
other gases released from fossil fuels

accounts for 67% of greenhouse gases that are making the globe warm. Therefore, shift towards Hydel energy, nuclear energy and solar energy etc. is needed to reverse impacts of climate change global warming.

ii) Reforestation is needed to reverse global warming:

According to Bonn challenge 2011, 350 million square kilometer of forests have been wiped out. Therefore, reforestation is needed in these areas to absorb greenhouse gases, increase moisture and improve shade which can reverse global warming.

iii) Population explosion must be controlled:

According to Intergovernmental panel on climate change (IPCC), world's population has increased to 8 billion. It leads to increase in industrialisation and transportation which leads to global warming. Thus, effective population control strategies can reverse emissions which are adding to global warming.

iv) Green urbanization can reverse global warming.

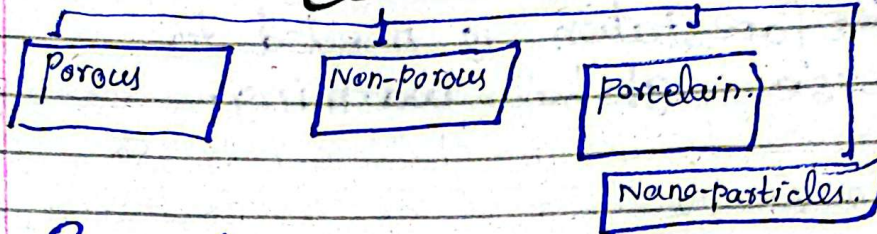
According to world's green building council, 40% of global emissions come from building materials. Thus, environmental friendly steel and aluminium, that release less carbon, can decrease emissions leading to reversal of global warming.

(B)

Defination of ceramics:

Hard, brittle and ~~non~~ porous non-conductors that are manufactured under very high temperature.

Ceramics.



Properties of ceramics:-

(i) Porous to non-porous.

Ceramics may be porous or non-porous. Delft and Majelids are non-porous ceramics while those of nano-particles are porous.

(ii) Require very high temperature.

Ceramics require extremely high temperature. Porous ceramics require 1000°C while porcelains require $1200-1500^{\circ}\text{C}$ for formation.

(iii) Hardness and Brittleness varies with temperature.

They are extremely hard. However, nano-ceramics are ultrafine particles that are used in technological sectors.

Application of ceramics:

(i) Used to make Tables:

Ceramics are used to make tables. Especially non-porous ceramics are ideal for making tables.

(ii) cooking Utensils:

Ceramics are used to make cooking utensils. Especially porcelain is used for this purpose.

(iii) Technological applications:

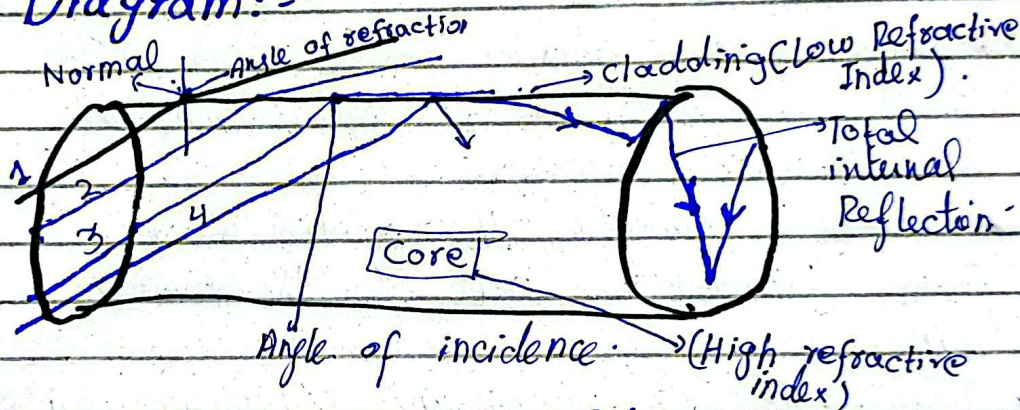
Ceramics are also used in semiconductor industry. Nano-ceramics are mostly used for this purpose.

(c)

Optic fibres:

These are the glass threads used to transmit light signals to long distances.

Diagram:-

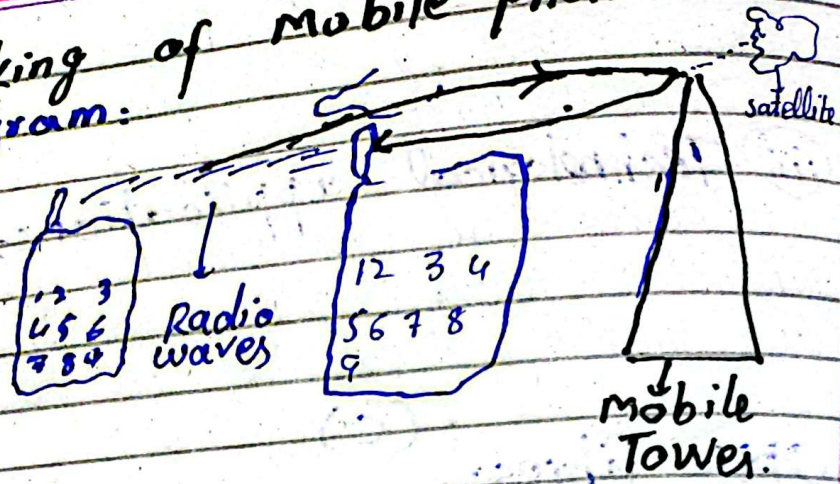


Working of optic fibres.

- When a ray of light strikes core-cladding boundary, it bends.
- The bending of light occurs at angle of reflection.
- When the angle of refraction is 90° , angle of incidence is called critical angle.
- When angle of incidence increases that of critical angle, light bends internally ~~ref~~ resulting in reflection of light inside the core.
- Through this total internal reflection, light signal reaches the other end.

Working of mobile phones:

Diagram:



Explanation:

- Mobile phones communicate with each other through wireless Telecommunication.
- When a person from one mobile dials a number, it is identified by nearby tower.
- Tower diverts the radio waves from incoming call to the receiving line.
- Tower identifies receiving number with the help of satellite.

(D)

1) Food additives:

Substances that are added to the food to improve its color, shelf life or nutritious values are called food additives.

Examples:

- Gum Gum is used to increase volume of food.
- phospholipids are used as emulsifiers in commercial Ghee.

2) Food preservatives:

These are the substances which are added to the food to prevent biological or chemical deterioration of it.

Examples:

EDTA and vitamin E preserves food like canned beans via anti-oxidation.

3) Food adulteration:

Substances that are advertently added by the people in pure food for economical gains.

Examples:

Water added to the milk to increase its volume.

4) Food preservation contaminants:

Substances that are inadvertently added to food which decrease its nutritive value.

Example:

Fungal deterioration of meat during transport.

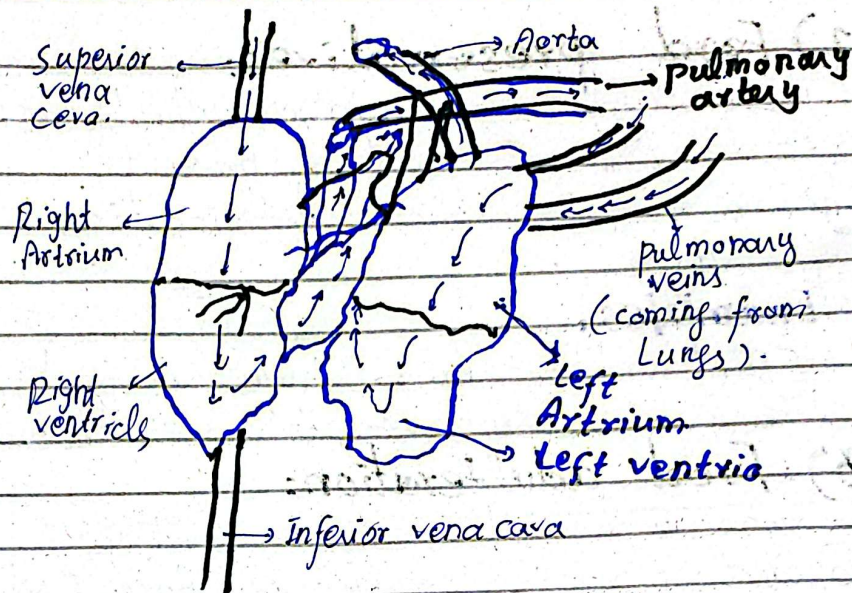
Q. 4.

(A)

Role of Heart in circulation:

Heart is a pumping organ that pumps the received blood between lungs and the body.

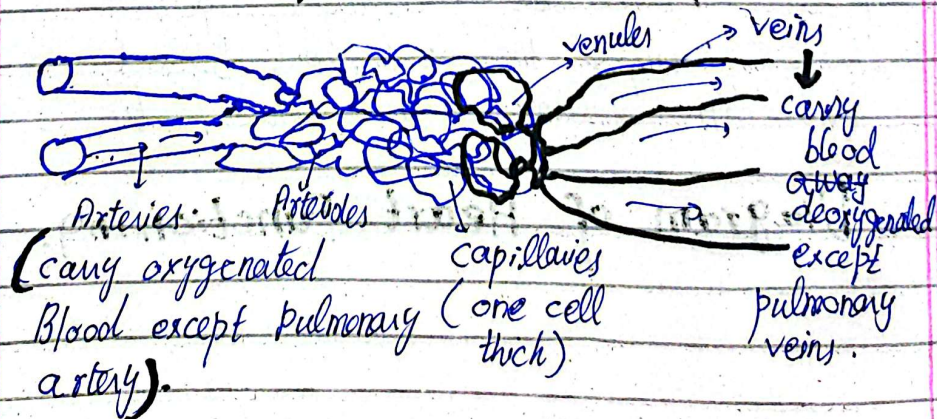
Diagram of Heart Functioning:



Explanation of Functioning:

- Heart consists of 4 chambers.
- Its Right atrium receives blood from Superior and inferior vena cava and ~~pulmo~~ which is deoxygenated blood.
- Right atrium pumps blood to right ventricle which pumps the same blood to pulmonary trunk.
- Pulmonary artery takes blood to lungs, where it gets oxygenated.
- ~~Right~~ Left atrium receives blood from pulmonary veins which is oxygenated.
- Left ventricle pumps oxygenated blood to whole body via aorta.

Diagram of the role of veins:



Role of blood vessels in circulation:

• Arteries carry oxygenated blood away from heart.

• Arteries divide into arterioles which further divide to capillaries.

• In capillaries, cellular exchange of oxygen and nutrients takes place.

• Capillaries again join to form venules which make veins.

• Veins carry de-oxygenated blood towards heart.

(B)

Cyclone:

Cyclone is a system of high-speed rotating winds formed under atmospheric pressure and Coriolis effect.

Parts:

Parts of cyclone include eye, eyewall and Ring.

Formation of cyclone.

Cyclone is formed of two parts forces i.e. Atmospheric pressure and Coriolis effect.

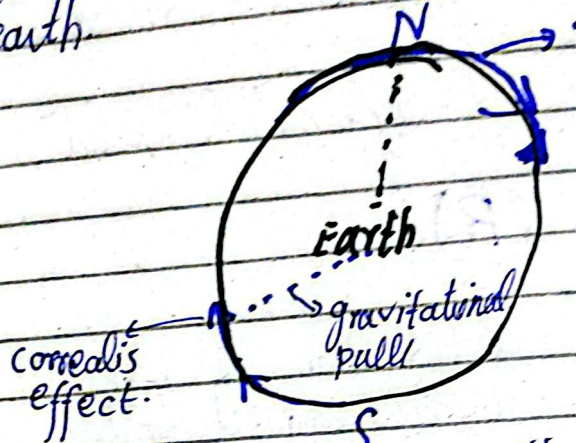
D Pressure gradient:

On the ocean and seas, the evaporation takes place. When evaporated vapors rise to height, they are condensed releasing heat. Heat lowers the pressure of surrounding coastal winds. Resultantly, high-speed wind from surrounding moves from high pressure area to low pressure

area resulting in cyclone.

2) Coriolis effect:

It is a force that tends to move the winds to the right in northern hemisphere and to left in southern hemisphere opposite to the gravitational force of earth.



when it combines with high pressure winds. It results in cyclone.

(C)

carbohydrates:

- Carbohydrates instantly provides energy to body e.g. dates
- Carbohydrates form the structure of body e.g. cellulose in plant's cell wall.

Proteins:

- Proteins shape muscles e.g. Globin proteins.
- Proteins provides immunity to body e.g. immunoglobulins

Fats:-

- Fats are the reserved source of energy i.e. provide 2.25 times energy that of carbohydrates
- Fats are important in Nervous

functioning: e.g. myelin sheath made up of fats.

Calcium:

- Calcium is essential for function of skeleton because that is important part of bone.
- Calcium is essential for healing.

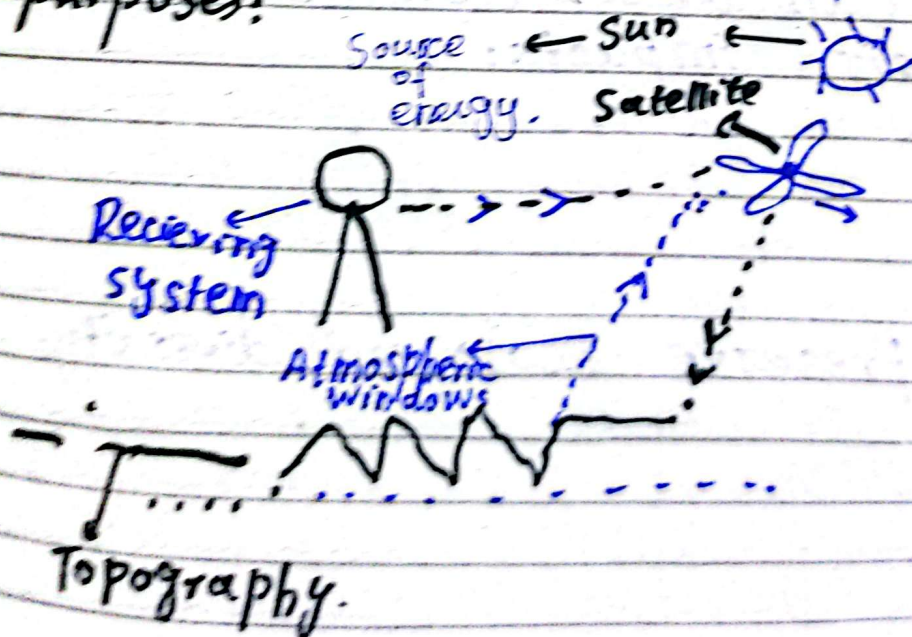
Iron:

- Essential for red blood cell function e.g. Iron in heme group of haemoglobins.
- Iron is essential for providing immunity to the body.

Remote sensing: (D)

It is the remote and smart study of earth and its atmosphere with the help of satellite.

Diagram to show the remote sensing for environmental purposes:



Explanation:-

Remote sensing use special waves like Infrared or Ultra-violet radiations to send signals to the earth and receive it which are called atmospheric windows.

ways to use Remote sensing for environmental purpose.

(i) Check Deforestation:

Remote sensor satellites can remotely check forest cover in an area and send it to earth station. For example, ETIM+ satellite can be used for this purpose.

(ii) Can ensure sustainable urbanization:

Remote sensor satellites can send and receive signals to check planning initiatives in urban centres, e.g. LANDSAT+ can ensure this purpose.

(iii) Can detect disasters before their impacts:

Remote sensing can capture image of the cyclones, tornadoes and floods which can help in early warning and monitoring.

(iv) Preserve ecological diversity:

Remote sensing satellites can maintain ecological balance. Through use of SeaWiFS remote sensing, it can detect the life under water.