Date:

PART - II

QUESTION # 2:

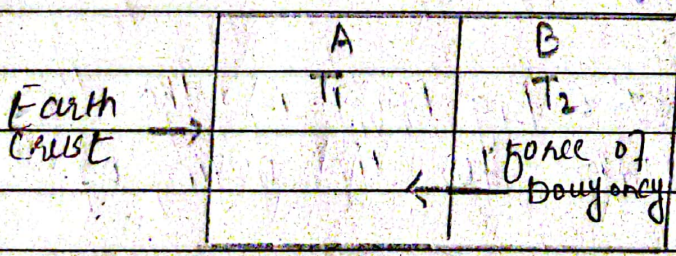
PART A:

ANSWER

DEFINITION: Volcanic eruption is the process in which a hole is created on Earth surface through which molten lava comes out.

PROCESS OF VOLCANIC ERRUPTION:

The entire surface of Earth is not at uniform temperature - Some places have higher temperature and other have lower temperature - The places which have higher temperature are less dense as compare to other places having low temperature -



A has higher temperature T_1 and B has lower temperature T_2 - Therefore ρ_1 is lower than ρ_2. B exert force of buoyancy on A. This results in movement of part A in upward direction.

The temperature inside the earth

is around 870°C - This temperature is enough for melting rocks - when surface A moves up to earth crust then gases and vapours start building pressure inside a mountain - with time. Pressure builds to the point that mountain surface eventually explodes and lava comes out from Earth and starts flowing down.

PART B:

BIG BANG: Big Bang is the theory related to the origin of universe

EXPLANATION: Big Bang theory asserts that before 13.7 billion years ago; Universe was inside a small bubble called as singularity - It was hot & dense than anything we can imagine.

BIG CRUNCH: The bubble exploded

Date:

and the universe was created - This explosion is known as Big Crunch - After this explosion time, matter and energy was created - Universe grew from smaller than atom to larger than galaxy -

EXPANSION AND COOLING OF UNIVERSE:

Universe started expanding and cooling - Particle of matter and antimatter was created - However they started destroying each other because of their opposite nature - More stable particles, proton and neutron was created when universe was 3 second old - After 1 minute, temperature of universe dropped to 1 billion °C - Proton and neutron combined to form hydrogen and helium - After 300000 years, temperature of universe dropped to 3000°C - Nucleus then captured electrons and formed elements of hydrogen and helium - It was in cloud form - These clouds then form other celestial bodies afterwards -

METHOD OF DETERMINING AGE OF UNIVERSE:

Carbon dating is the method employed for determining the

Pg No

Date:

the age of universe. Carbon content of material is determined to determine the age of material. In case of universe, material from solar system e.g rocks of moon can be used to determine the age of universe.

PART C:

RENEWABLE ENERGY:

Renewable energy is that source of energy that replinish itself over the course of time and have fewer impacts on the environment.

SOURCES OF RENEWABLE ENERGY:

Following are the sources of renewable energy:

(1) **HYDROPOWER THROUGH WATER:**

Hydropower is the energy that is produced ~~water~~ from the water jets or moving water with the help of dams. Water is stored in the reservoir of dam. This water is released which then moves the turbine attached on downside. As the turbine moves, potential energy of water is converted. This turbine is connected to the shaft of generator which then moves

Date:

and produce electricity - This electricity then use for many purposes.

(2) WIND ENERGY THROUGH MOVING WIND:

Moving wind is utilized to produced energy - When moving wind strike the wind turbine, it starts moving - Kinetic energy of wind is converted to mechanical energy - This turbine is converted to shaft of generator which moves and produce electricity -

(3) SOLAR ENERGY THROUGH SUNLIGHT

Solar energy is produced with the help of sunlight - Photovoltic cells are used for this purpose - These cells are exposed to sunlight - when sunlight falls on them, it convert that energy into electricity which is supplied to homes or organization -

(4) GEOTHERMAL ENERGY:

The temperature inside the Earth is high - It is around 870°C which cause melting of rocks - When underground comes in contact with it then temperature of water increa-

Yes- In some places, it comes upto the earth surface- These are called hot springs- However, in other surfaces, water is pumped inside the earth with the help of pipe- This water comes in contact with hot rocks which increases its temperature and convert it into steam which can be used as utility.

(5) **BIOFUELS THROUGH BIOMASS:**
Biofuels are the fuels that are produced from biomass- Biomass is biological waste- It includes animal waste; plant waste, oil rich resources and algea- Different types of waste are used to produce different biofuels- Animal waste is used to produce biogas and oil rich waste are used to produce biodiesel-

PART D:

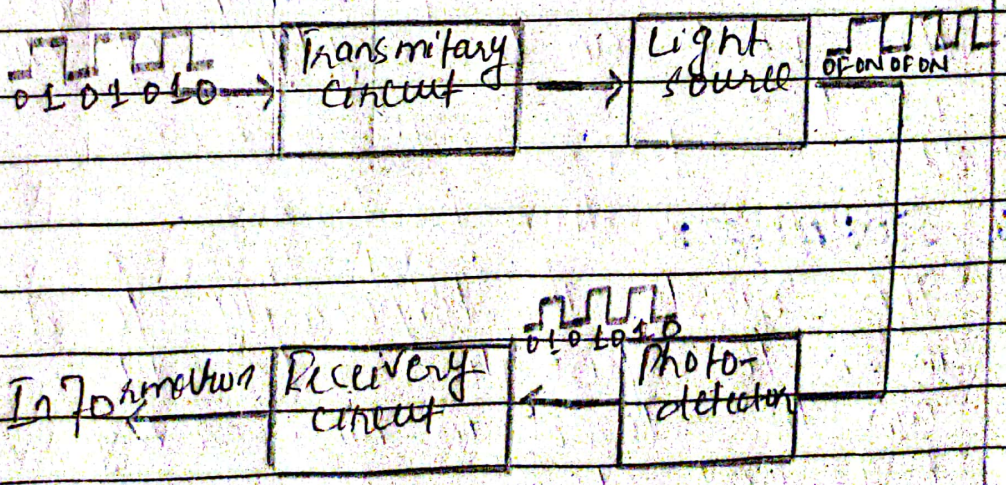
DEFINITION:
It is a technology in which information is transfered in the form of light through hollow glass-

PRINCIPLE OF WORKING:

When light strike glass at an angle of 42° then light is totally reflected back inside glass as if glass is mirror. This is called total internal reflection.

WORKING OF OPTICAL FIBER:

The working components of optical fiber are transmitary circuit, light source, photo detector and receivery circuit. Information is sent to transmitary circuit in the form of electrical signals. Light source converts this electrical signal into light signal. These signal then travel through optical fiber. Upon reaching the receivery circuit, these are then converted back into electrical signal. Receivery circuit receives these electrical signal, processes it and make the information available.



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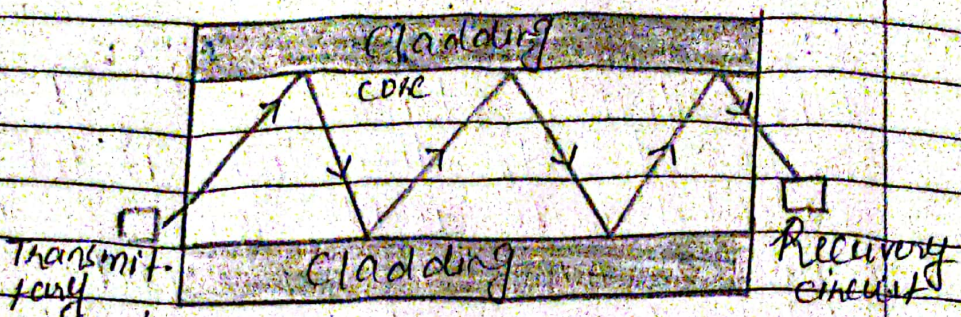


QUESTION 4:

SOLID WASTE MANAGEMENT:

It is a systematic handling, collection, transportation, treatment and disposal of solid waste.

METHODS EMPLOYED IN SOLID WASTE MANAGEMENT:

Following are the methods employed in solid waste management.

① GENERATION:

Waste is generated through different activities of human beings. This waste can be any type of solid waste.

② STORAGE:

This waste is temporarily stored on the generation sites. It can be stored in bins, carbage bags and etc.

Date:

③ **COLLECTION:**
This waste is collected from storage facilities - This work is done by government through its municipal department -

④ **TRANSPORTATION:**
The collected waste is transported to treatment plant - Different type of transport can be used - It depends upon the volume of waste, distance to cover and type of waste

⑤ **TREATMENT:**
In this step, recyclable materials are separated from other. Precious components from waste are also separated. Different types of waste are separated for different disposal method

⑥ **DISPOSAL:**
In this step, the waste is either discarded by suitable methods or converted into other substances - There are various methods of disposal like open dumping, composting and vermi composting -

PART C

(1) MYOPIA: Myopia is a disorder of eye in which person is unable to see distant object clearly but can see far away near thing clearly.

(a) CAUSES OF MYOPIA: It is caused by large size of retina & large curvature of lens which cause image to form infront of retina instead of on it.

(b) PREVENTION: Lenses and cetropine drops can prevent myopia.

(2) HYPEROPIA: Hyperopia is a disorder of eye in which person is unable to see near object clearly but can see far away object clearly.

(a) CAUSES OF HYPEROPIA: It is caused by small size of retina and small curvature of lens which cause image to form behind retina instead on it.

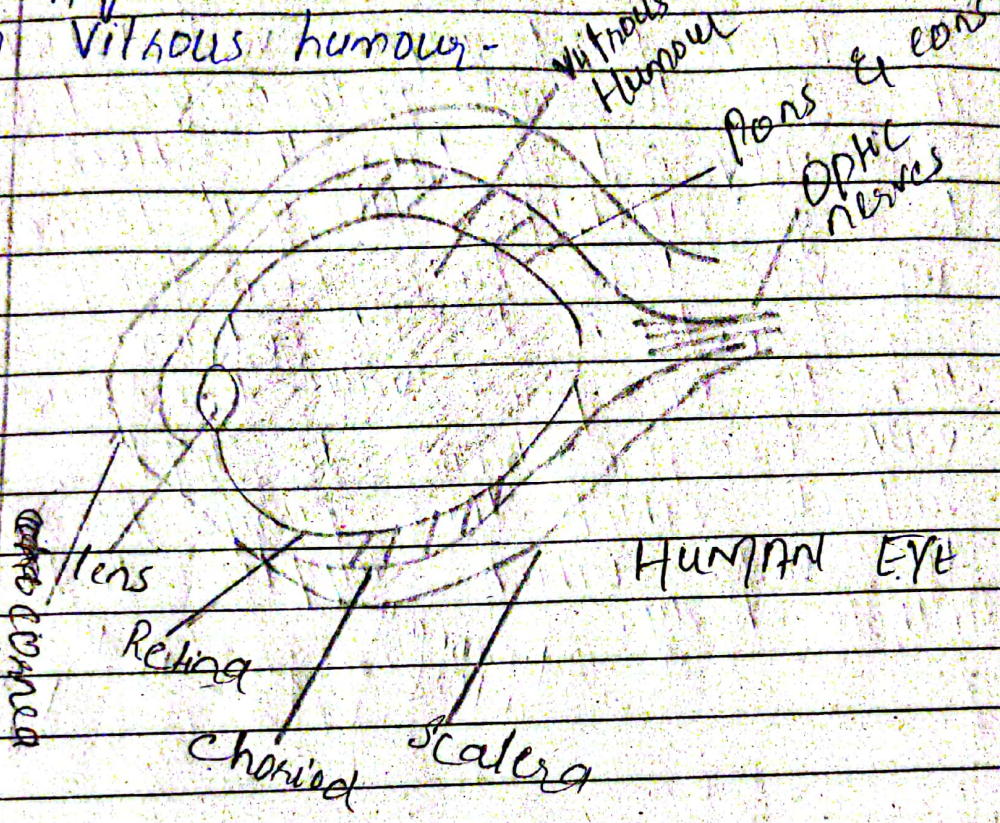
(b) PREVENTION: Convex lens and LASIK surgery can prevent it.

(3) PARTS OF EYE:
Following is the list of parts of eye

(a) Cornea

Date:

(b) Iris
(c) Pupil
(d) Lens
(e) Retina
(f) Rods and Cons
(g) Scalera
(h) Choriod
(i) Aqueous humour
(j) Vitreous humour -



PART B:

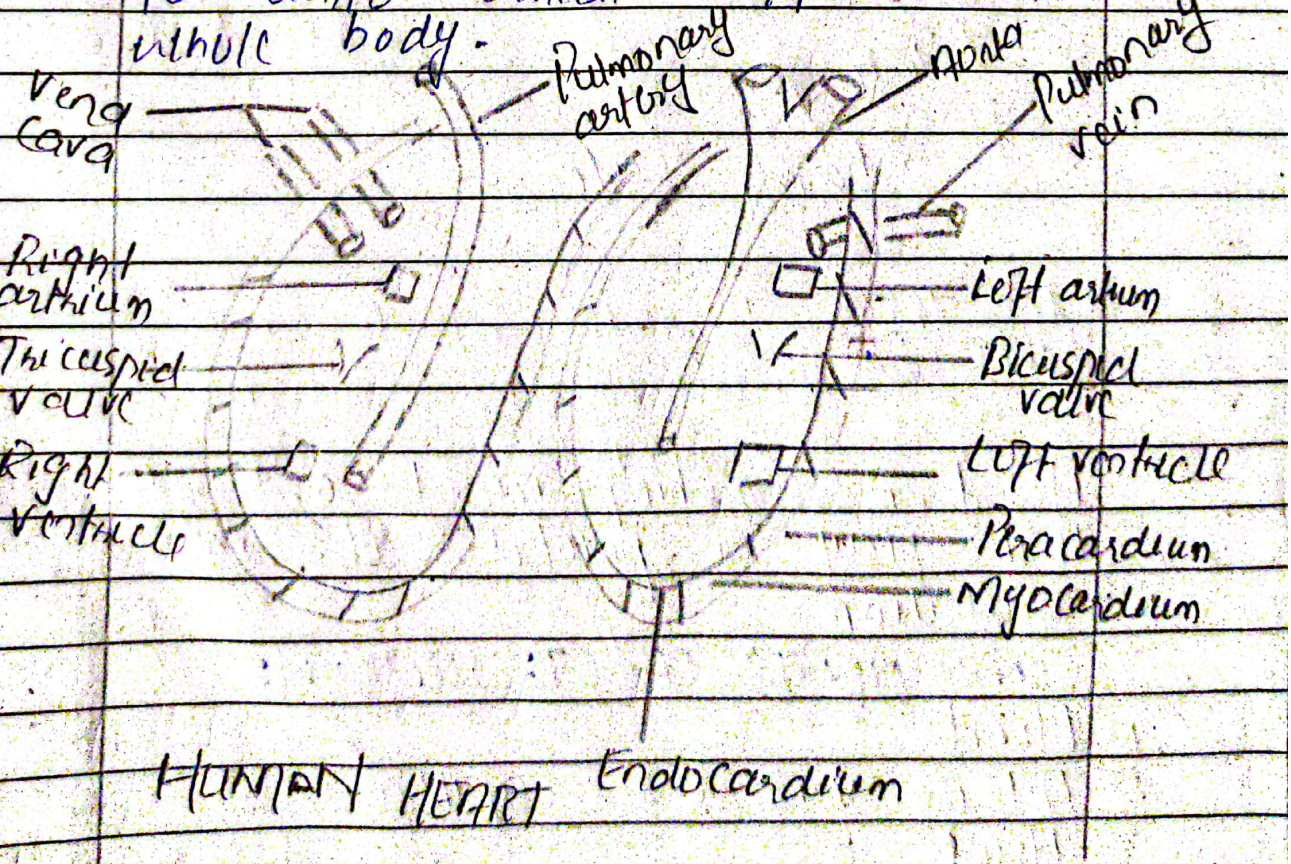
Heart is a chief muscle of body that play a pivotal role in circulation

COMPONENTS OF CIRCULATION:

1) Blood
2) Arteries, Veins and Capillaries
3) Heart

FUNCTION OF HEART:

Blood after making a round trip from body has given all of its oxygen and absorbed tissue's waste. This blood is collected in superior vena cava and inferior vena cava which then pump it to right artrium. Right artrium transfered this blood to tricuspid valve which then goes to pulmonary artery. Pulmonary artery take this blood to lungs which then purify it. Pulmonary vein take blood from lungs and transfer it to left artrium and then to bicuspaid valve. Bicuspaid valve transfers blood to left ventricle which then pump blood to aorta which supplies it to whole body.



HUMAN HEART

PART D

(1) MICROWAVES:

(a) Used in oven for heating purposes
(b) Used for killing microbes during preservation

(2) Ultraviolet:

(a) UV are used for destroying tumors
(b) UV are used for curing jaundice

(3) X-RAYS:

(a) Used for destroying cancer cells
(b) Used for ~~imaging~~ imaging body parts

QUESTION 8

Part a:

Let the three consecutive odd numbers are x, $x+2$ & $x+4$

Their sum is 273

$$x + x+2 + x+4 = 273$$
$$3x = 273 - 6$$
$$3x = 267$$
$$x = \frac{267}{3}$$
$$x = 89$$
$$x + 2 = 89 + 2 = 91$$
$$x + 4 = 89 + 4 = 93$$

Part b:

(i) 4, 16, 36, 64, ?, 144

The series is
$2^2, 4^2, 6^2, 8^2, 10^2, 12^2$
$10^2 = 100$
Missing number is 100

(ii) 30, 29, 27, ?, 20, 15

30 - 1 = 29
29 - 2 = 27

Date:

27 - 3 = 24
24 - 4 = 20
20 - 5 = 15

Missing number is 24

(iv) 0, 2, 6, 12, 20, 30, ?

0 + 2 = 2
2 + 4 = 6
6 + 6 = 12
12 + 8 = 20
20 + 10 = 30
30 + 12 = 42

Missing number is 42

Part C

(1) THRST
SHIRT

(2) GNDREA
GARDEN

(3) SCHAMOT
STOMACH

(4) ONLNDO
LONDON

(5) HIODALY
HOLIDAY

Part d

Let Sara's age is x
Her mother age is $6x$
Her brother age is $2x$
After 3 years sum of their ages is 72

$$(x+3)+(6x+3)+(2x+3)=72$$
$$9x+9=72$$
$$9x=72-9$$
$$9x=63$$
$$x=\frac{63}{9}$$
$$x=7 \text{ year}$$

Her mother age is $6 \times 7 = 42$

Date:

QUESTION 6:

Part a:

3 candidates contested election and winning candidate is the one that receives highest vote which is 15000. Therefore the percentage is

$$\% = \frac{\text{Part of thing}}{\text{Total thing}} \times 100$$

$$\text{Percentage} = \frac{15000}{15000 + 10000 + 8000} \times 100$$

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

$$= 0.454 \times 100$$

$$= 45.4\%$$

Winning candidate receives 45.4% votes

Part b

Total sum of angle of triangle is 180

Sum of ratios is $2 + 4 + 5 = 12$

$$\text{Angle 1} = 180 \times \frac{2}{12}$$

$$\text{Angle 1} = 45°$$

Pg No.

Angle 2 = $\frac{60}{180} \times \frac{4}{128}$

= 60°

Angle 3 = $\frac{90}{180} \times \frac{30}{128} \times \frac{10}{8}$

Angle 8 = 75°

=

Part C:

As given ratio is 4:6

Sum of ratio is 10

Let total individuals are x

Formula for ratio

Magnitude of Part = $\frac{\text{magnitude of whole}}{\text{sum of ratio}} \times \text{individual ratio}$

Number of Girls = $\frac{\text{Total individuals}}{\text{sum of ratio}} \times \text{girl's ratio}$

$102 = x \times \frac{6}{10}$

$102 \times 10 = 6x$

$\frac{1020}{6} = x$

$x = 170$

Total individuals = number of boys + number of girls

170 = Number of boy + 102
170 - 102 = Number of boys
68 = Number of boys

Part d:

Ratio of present age of A & B is $\frac{6}{7}$

After 5 years the ratio becomes:

Ratio of present age of A and B is $\Rightarrow \frac{A}{B} = \frac{6}{7}$ -(i)

Ratio after 5 years is $= \frac{A+5}{B+5} = \frac{7}{8}$ -(ii)

From (i)

$\frac{A}{B} = \frac{6}{7}$

$A = \frac{6B}{7}$ -(iii)

Put (iii) in (ii)

$\frac{A+5}{B+5} = \frac{7}{8}$

$\frac{6B}{7} + 5 = \frac{7}{8}(B+5)$

$\frac{6B+35}{7} = \frac{7B+35}{8}$

$8(6B+35) = 7(7B+35)$

$48B + 280 = 49B + 245$

Date:

$280 - 245 = 49B - 48B$

$35 = B$

$A = \frac{6B}{7} = \frac{6 \times 35}{7} = 30$

Present age of A and B are 30 and 35