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ROLL NO : 30864
BATCH : RWP (046)
GENERAL SCIENCE AND ABILITY.

PART-II

SECTION-I

QNO: 3.

a. What methods are employed in solid waste management.

SOLID WASTE MANAGEMENT:

Solid waste management is the process of handling the solid waste generated from different sources including municipal, terrestrial domestic and institutional waste. It includes waste collection, transfer and disposal.

STEPS OF SOLID WASTE MANAGEMENT:

1. **Collection Phase:**

It is the stage where waste is collected by trained staff and then transferred to the waste disposal facilities.

2. **Recovery Phase:**

It is the phase where important materials which can be reused and recycled are separated from waste. For example: Plastic and glass bottles are recovered from waste.

3. **Disposal Phase:**
It is the most important phase. It is responsible for disposing off the solid waste. It employs different methods to dispose off waste depending on the nature of waste material.

METHODS EMPLOYED IN SOLID WASTE MANAGEMENT:-

Following methods are employed in the management of solid waste:

1. **LANDFILL:**
It is a method in which special large landfills are created in the surface of earth. They are then coated with a material percolate to prevent the leaching of solid waste to ground water. The landfills are filled with waste materials. They are created away from residential areas, schools and hospitals.
Ex:- Land fills are located in vicinity of Islamabad city.

2. **OPEN DUMPING:**
It is a method in which waste is dumped openly on ground. It is not an ideal method because it increases
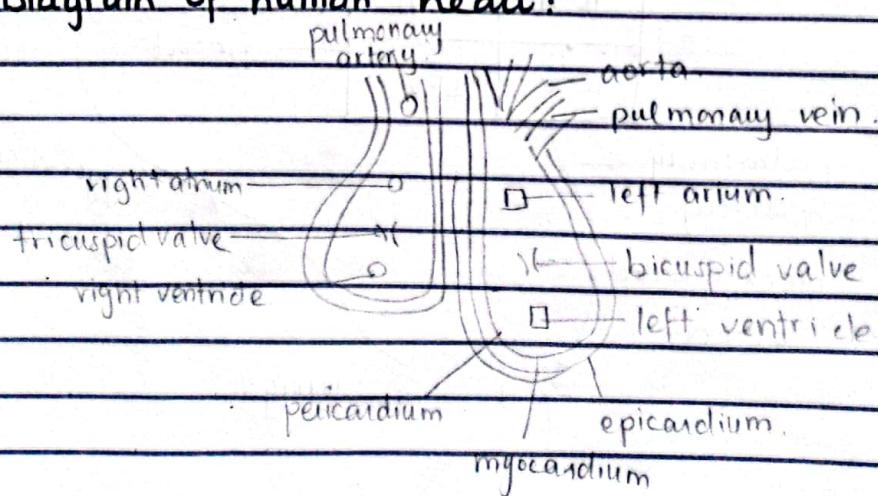
pollution and serves as a breeding site of mosquitoes and other pests.

3. COMPOSTING:

It is a method in which the waste are added in a designed chamber and allowed to compost. They are ideal for organic wastes. There are certain natural organisms who are involved in composting, like vermi Composting is done by worms.

b. How does a human heart....?

○ HUMAN HEART: is the organ of human which is responsible for pumping blood to all parts of human body. It is located in thoracic cavity.

• BLOOD CIRCULATION: is the process by which human heart pumps blood to all parts of the human body by using a network of blood vessels i.e capillaries, veins and arteries.

•• Diagram of human heart:

pulmonary artery

aorta

pulmonary vein

right atrium

left atrium

tricuspid valve

bicuspid valve

right ventricle

left ventricle

pericardium

epicardium

myocardium

- Working of human heart in blood Circulation:

- The human circulates blood through arteries capillaries and veins. The left side of heart i.e left atrium receives oxygenated blood through pulmonary vein. It then sends that blood to left ventricle, which has an aortic valve. It then sends blood through aorta to other parb and itself.

- The human heart : right atrium receives all the deoxygenated blood through superior and pulmonary inferior vena cava artery. It then send the blood to right ventricle by contracting. Then right ventricle contracb and sends blood to the pulmonary artery, which transfers deoxygenated blood to lungs. Oxygenation of blood takes place in the lungs and finally oxygenated blood is transfered via pulmonary vein to heart.

- Schematic diagram of transfer of blood:

pulmonary vein

R·A | L·A

R·V | L·V

heart

pulmonary artery.

deoxygenated blood

oxygenated blood

lungs
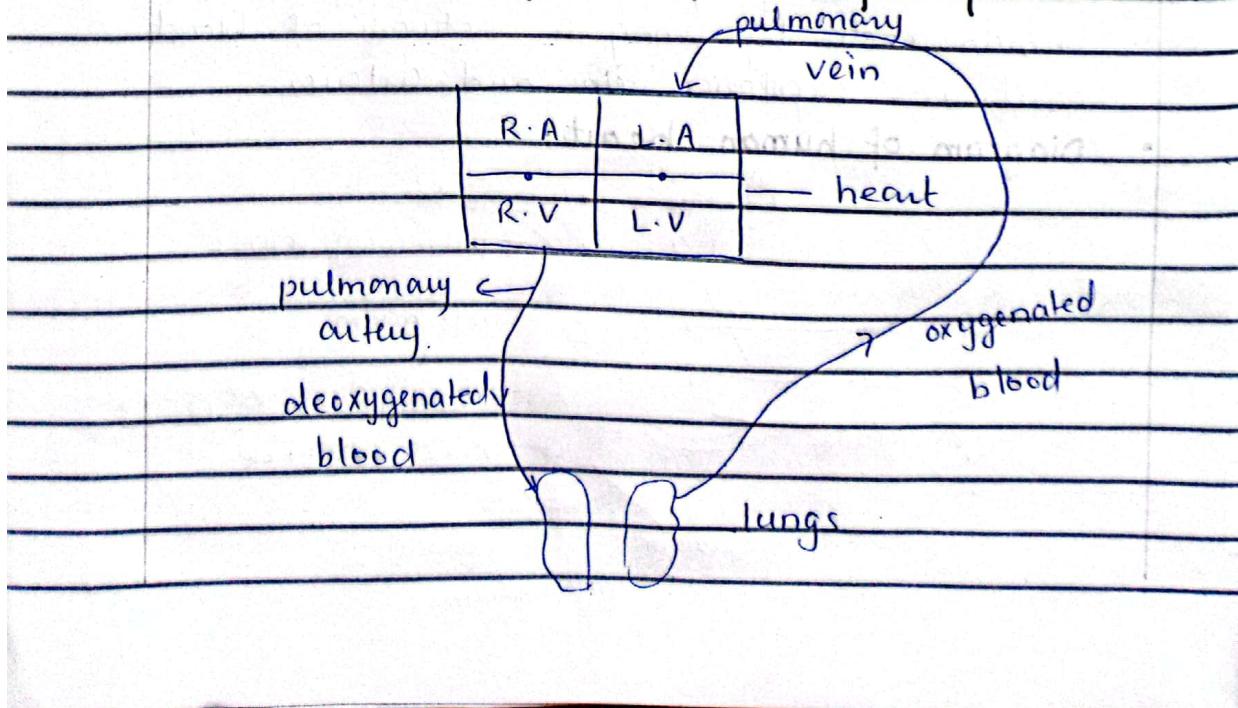
c. **MYOPIA:**

Myopia is also known as short sightedness. It is a condition when people can not view the distant objects clearly. It is mostly corrected by using convex lens.

HYPEROPIA:

Hyperopia is also known as long sightedness. It is a condition when people can not view near object clearly. It is mostly corrected by using concave lens.

• **HUMAN EYE:**

It is the sensory organ which receives sensory information and it then transfers it to brain in the form of signals so that brain can analyze it and image formation can take place.

• **major Parts of human eye:**

1. Lens
2. Retina
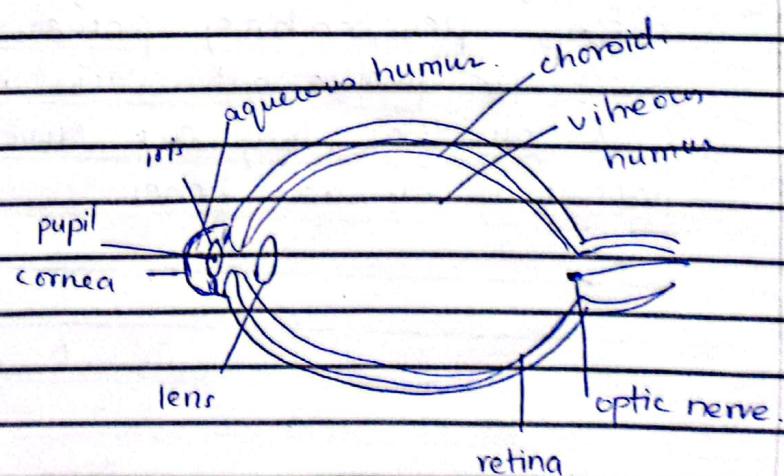3. Sclera
4. Optic Nerve
5. Choroid
6. Pupil
7. Cornea

Figure: Diagram of human eye.

d. Write uses of each:

1. Microwaves:

They are used in microwaves for heating food. They are used in RADARS. They have long wavelength, so they can be used in wireless internet connectivity.
° The microwaves used in a microwave have intensity of 2.45 GHz.

2. Ultraviolet:

Ultraviolet waves are a part of electromagnetic spectrum which are created by thermal agitation process. They are mostly used in the process of sterilization in the biosafety cabinets. They are used in sterilization lamps. They are used in temperature sensors.

3. X-rays:

They are a part of electromagnetic spectrum. They are also known as Rontgen w rays. They have very high penetrating power. They can be used for finding out cracks in the bridges and buildings. They are used to visualize fractures in human bones.

QNo 5. FOOD PRESERVATION:

Food Preservation is the process of preserving food to maintain its taste, quality and texture. It is used to protect the food from decaying and the growth of microorganisms.

METHODS OF FOOD PRESERVATION:

1. **Cooling:**
   Cooling is used to preserve food by storing it an optimum temperature of around 4°C. It is used in the refrigerators.

2. **Freezing:**
   Freezing is used to preserve food for longer durations of time by storing it at extremely low temperature. It is mostly used to preserve meat, chicken etc.

3. **Drying:**
   Drying is the process of storing food by removing its moisture content so that microbial activities can not take place in food. In ancient times people used to store food bey like meat by drying it.

4. **By adding Preservatives:**
   Preservatives are certain substances added to food to increase its shelf life. Citric acid and sodium benzoate

are examples of food preservatives.

b: MILKY WAY: is a galaxy which contains a number of stars, planets, etc. Our solar system is the part of the milky way galaxy.
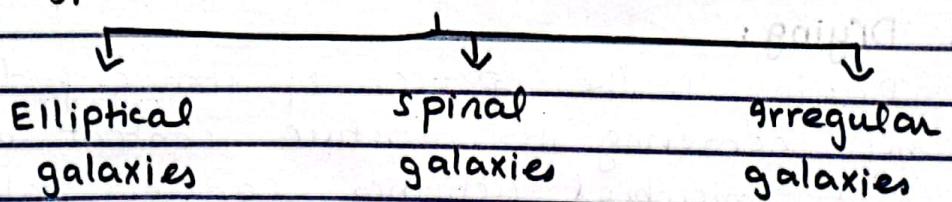
- **Galaxy:**
  A galaxy is an gravitationally bound system of stars, dark matter, gases, planets, dust and various cosmic objects.

- **Dark Matter:**
  Dark matter is also known as the cosmological cement. It is used for holding the stars within a galaxy. About 27% of universe is dark matter.

- **Types of Galaxies:**

| Elliptical galaxies	Spiral galaxies	Irregular galaxies
• they are elliptical in shape	• They are spiral shaped	• They do not have a regular shape
Ex: ~~milkyway~~ Cygnus A	Ex: milkyway	Ex: small and large magellenic clouds

- **Parts of galaxies:**
  A galaxy contains following parts:-

1. dark matter
2. planets
3. stars
4. dust
5. gases

c.

SOLAR ECLIPSE	LUNAR ECLIPSE
Solar eclipse is the eclipse which occurs when earf moon comes in between the sun and earth.	Lunar eclipse occurs when earth comes in between the sun and moon.

Sun   moon   earth

Sun   earth   moon.
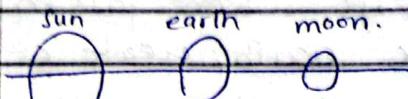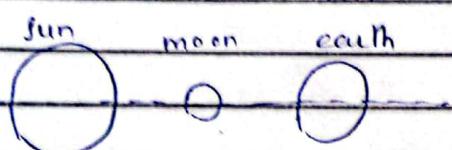
Classification:

It is of 3 different types:-

1. **Total solar eclipse:**
It occurs when moon is exactly aligned on the same line joining the center of sun and moon

2. **Partial solar eclipse**
It occurs when the moon is slightly above or below the center joining center of sun and moon.

Classification:

It is of two types:

1. **Total lunar eclipse**
It is also known as umbra. It occurs when earth is exactly aligned at the line joining the center of sun and moon.

2. **Partial lunar eclipse**
It is also known as penumbra. It occurs when earth is slightly above or below the line joining the center of sun and moon

3. **Annular solar eclipse:**
It occurs few seconds before or after the total solar eclipse. As the size of moon is very small, so when it comes in between the sun and moon, even then some rays are allowed to pass from its sides. The rays when fall on the earth, create a bead like pattern known as Baily beads or The lovely diamond effect.

- Prayer offered at time of solar eclipse is Kasoof

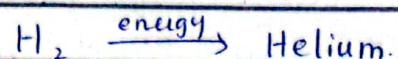 Prayer offered at time of lunar eclipse is Khasoof

| d.	Nuclear Fission	Nuclear Fusion
o	It is the process in which a large nuclei breakes into smaller nuclei and releases energy	It is a process in which smaller nuclei join to form a bigger nuclei. It requires energy
	Helium $\longrightarrow$ H$_2$ + energy	H$_2$ $\xrightarrow{energy}$ Helium.

They are used mostly | Fusion reactions
in creating nuclear | are taking place on
explosive devices | the surface of earth.

- **IONIC BOND:** is a bond which is created between substances which shares ions with each other.
Example: sodium chloride, commonly known as table salt has ionic bond. It is created made up of sodium and Chloride elements. Sodium has extra electrons and chlorine has needs some extra electron, so that its outer shall valency can be completed. So sodium transfers its extra electron to chlorine. As a result positive charge appears on of sodium and negative charge appears on chlorine.
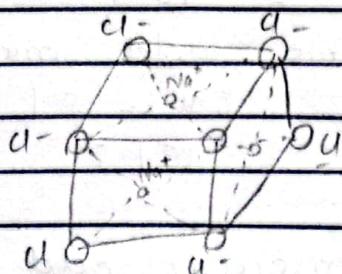
Schematic diagram of sodium chloride ie table salt. Na^+ are sodium ions while cl^- are chloride ions.

$\mathcal{S}$ECTION - II

Q NO: 8

a. Data:

Three consecutive odd numbers = $x, 3x, 5x$

Sum of three consecutive odd numbers = 273.

Solution:

$$x + 3x + 5x = 273$$
$$9x = 273.$$
$$x = \frac{273}{9}$$
$$x = 30.3.$$

○ First consecutive odd number is 30.3.

○ 2nd consecutive odd number:

$$= 3x = 3(30.3)$$
$$= 90.9.$$

○ 3rd consecutive odd number is:

$$= 5x = 5(30.3)$$
$$= 151.5.$$

∴ Three consecutive odd numbers

are 30.3, 90.9, 151.5.

b. Find missing number:

i. 4, 16, 36, 64, ____, 144.

ii. 30, 29, 27, <u>24</u> , 20, 15.

The missing number 24 is obtained by subtracting consecutive numbers in reverse.

iii. 1, 7, 15, 25, <u>37</u> , 51

The number 37 is obtained by adding consecutive ~~nut~~ even numbers.

iv. 0, 2, 6, 12, 20, 30, <u>42</u>

The missing number is 42.

v. 48, 24, 72, 35, 108, <u>53</u>.

c. Find out correct form:
1. THRSI
   Correct form of this word is SHIRT.

2. GNDREA.
   Correct form of this word is DANGER

3. SCHAMOT
   Correct form of this word is STOMACH.

iv. **ONLNDO**

Correct form of this word is LONDON.

v. **HIODALY**

Correct form of this word is HOLIDAY.

d. **Data:**

Let sara be x

Let sara's mother be y

○ Sara's mother is 6 times older than Sara.

$(x + 6)(y + 6)$

Let sara's brother be z.

Sara's mother	Sara	Sara's brother
x	y	z
$6(x+6)(y+6)$		$(x+$

Q6.a. Data:

Votes of candidate 1 = 15,000

"   "   "   2 = 10,000

"   "   "   3 = 8,000.

Percentage of votes of winning candidate = x.

Total sum of votes = 15,000 + 10,000 + 8,000

= 33,000.

votes of winning candidates = 15,000

$$\text{Percentage of winning candidates} = \frac{\text{votes}}{\text{total votes}} \times 100$$

$$= \frac{15,000}{33,000} \times 100$$

$$= 0.48 \times 100$$

$$= 48\%.$$

The percentage of votes of winning candidate is $\boxed{48\%.}$

b. Data:

Ratio of angle of a triangle are = 3 : 4 : 5.

Find the angles = ?

Sum of total angles of a triangle are = 180°

Let the ratio be = $3x : 4x : 5x$.

Acc. to formula sum of all angles is equal to 180°.

So

$$3x + 4x + 5x = 180$$

$$12x = 180$$

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

$$x = 15$$

Angle 1 = 3(15) = 45

Angle 2 = 4(15) = 60

Angle 3 = 5(15) = 75

c. **Data:**

Each group has:

$$\text{Boys} : \text{Girls}$$
$$4 : 6$$

If there are 102 girls, then how many boys.

let unknown boys be = x

$$\text{Boys} : \text{Girls}$$
$$4 : 6$$
$$x : 102$$

so

$$\frac{4}{x} \quad \diagdown \quad \frac{6}{102}$$

$$4 \times 102 = 6x$$
$$6x = 408$$
$$x = \frac{\overset{204}{408}}{\underset{3}{6}}$$
$$= \frac{204}{3}$$
$$x = 68.$$

If there are 102 girls so 68 boys would be required.

d. **Data:**

Ratio of present ages of:

$$A : B \text{ is}$$
$$6 : 7.$$

After 5 years this ratio would become.
7 : 8.

Present ages of A = ?

"   "   "   B = ?