

DAY _____

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Section - II

Qno:- 06
(A)

Data:- $9 + 8 + 10 + K + 12 = 15$.

$$K = ?$$

Solutions:- $9 + 8 + 10 + K + 12 = 15$

$$\therefore \frac{39 + K}{5} = 15$$

$$39 + K = 15 \times 5$$

$$39 + K = 75$$

$$K = 75 - 39$$

$$K = 36$$

To verify: $9 + 8 + 10 + 36 + 12$

$$\frac{1573}{81} = 15 \text{ Ans}$$

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(B)

Data:-

ratio of sugar and water solution = $\frac{4}{3}$

after adding 10 liters more colored water it become = $\frac{4}{5}$

find sugar quantity = ?

Sol:-

$\frac{4x}{3x}$ after adding 10 liters of water $\frac{4}{5}$

$$\frac{4x}{3x+10} = \frac{4}{5}, \quad 5 \times 4x = 4(3x+10)$$

$$20x = 12x + 40$$

$$20x - 12x = 40 \Rightarrow$$

$$8x = 40$$

$$x = \frac{40}{8}$$

$$x = 20 \text{ liters of } \mu$$

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(C)

Data:-

$$\text{radius} = 12 \text{ cm}$$

$$\pi = 3.14$$

$$V = ?$$

$$\text{Sol:- } V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} \pi (12)^3$$

$$V = \frac{4}{3} \pi 1728$$

$$V = \frac{6912 \pi}{3}$$

$$V = 2304 \times 3.14$$

$$V = 7234.56 \text{ cm}^3$$

(D)

-10, -8, 6, 40, 102 ?

-10, -8, 6, 40, 102, 260
Ans

Q no: 07

(A)

Data:-

$$20\% \text{ of } x = y$$

$$y\% \text{ of } x = ?$$

Sol:-

$$y = 0.2 \text{ of } x$$

now find the percentage of y

$$\frac{y}{100} \times 20 = \frac{0.2 \times 20}{100}$$

$$\frac{0.2 \times 20}{100} = \frac{4}{100} = 0.04\% \text{ of } x \text{ is equal to } y. \underline{\underline{\text{Ans}}}$$

(B)

Data:-

$$P \text{ and } Q = \text{avg monthly salary} = 5050$$

$$Q \text{ and } R = \text{avg monthly salary} = 6250$$

$$P \text{ and } R = \text{avg monthly salary} = 5200$$

find the monthly salary of P?

Sol:-

$$P \text{ and } Q = 5050 \times 2 = 10100 \text{ --- (i)}$$

$$Q \text{ and } R = 6250 \times 2 = 12500 \text{ --- (ii)}$$

$$P \text{ and } R = 5200 \times 2 = 10400 \text{ --- (iii)}$$

lets make equation (4)

$$Q = 10100 - P \text{ --- (iv)}$$

now substitute this in second equation.

$$Q + R = 12500$$

$$(10100 - P) + R = 12500$$

$$R = 12500 - 10100 - P$$

$$R = 2400 - P$$

now add the value of R in equation (iii)

$$P + R = 10400$$

$$P + (2400 - P) = 10400$$

$$2P + 2400 = 10400$$

$$2P = 10400 - 2400$$

$$2P = 8000$$

$$P = 8000 \div 2$$

$$P = 4000$$

The monthly salary of P is 4000

Ans

(C)

Data:-

Two coins tossed = 500 times

Two heads = 105 times

One head = 275 times

No head = 120 times

find the probability of each to occur?

Sol:-

Probability of two heads = $\frac{\text{favourable outcomes}}{\text{Total number}}$

$$P = \frac{105}{500} = 0.21 \quad \checkmark$$

Probability of one head = $\frac{\text{favourable outcomes}}{\text{Total number}}$

$$P = \frac{275}{500} = 0.55 \quad \checkmark$$

Probability of no head = $\frac{\text{favourable outcomes}}{\text{Total number}}$

$$P = \frac{120}{500} = 0.24 \quad \checkmark$$

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(10)

Data:-

Jamie's Dad = $4x$ of Jamie
 after 14 years Jamie's Dad = $2x$ of Jamie
 find the sum of Jamie's age now
 and Jamie's Dad age = ?

Soln:-

$$\text{Dad} = 4\text{Jamie}$$

In 14 years =

$$4J + 14 = 2(J + 14)$$

$$4J + 14 = 2J + 28$$

$$4J - 2J = 28 - 14$$

$$2J = 14$$

$$J = 14 \div 2$$

$$J = 7$$

now find out Jamie's Dad age.

$$D = 4 \times J$$

$$D = 4 \times 7 = 28$$

now sum of their ages now.

Jamie's Dad + Jamie

$$28 + 7$$

35 years

Section - I

Q no - 02

(A)

Dengue:-

Dengue is a viral infection that spreads from mosquitoes to people. It is commonly spread by the mosquito *Aedes aegypti*. It is more common in tropical and sub tropical region. This disease is caused by the dengue virus, which has four types (DEN-1, DEN 2, DEN 3, DEN 4)

Causative Agents:-

It has two

Causative agents:

1. Dengue virus:- This virus belong to *Fluvirius* family and it is classified into four types (DEN-1, DEN 2, DEN 3, and DEN-4).
2. Mosquito Bites. *Aedes aegypti* is a primary known vector for dengue fever.

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Symptoms:-

Dengue symptoms typically appear in 4 to 10 days after being bitten and can range from mild to severe. Some of the common symptoms are here under.

1. High fever
2. Severe headache
3. Sweating
4. Pain behind the eyes
5. Muscle Pain
6. Loss of appetite
7. Rash.

(B)

Dark Matter:-

Dark matter is a form of matter that does not emit, absorb or reflect light, making it appear invisible and undetectable. It can only be detected through gravitational effect on visible matter. It is believed to make up about 27% of

of the Universe total mass.

Key points:-

1. When astronomers measure the rotation of galaxies that find out that the outer regions rotate much faster than expected and visible base. This led to the discovery of dark matter.
2. The composition of dark matter is still unknown. It is believed that it is composed of exotic particles that do not interact with electromagnetic forces.
3. It is significant as it influences how galaxies form, rotate and behave in the Universe.

Dark Energy:-

Dark energy is a mysterious form that is considered as a main factor in the expansion of the Universe. It is believed to make up about ~~65~~ 68% of the Universe total energy.

Key points:-

1. It was discovered by two astronomers in 1990's when they observe that the Universe is

expanding at a faster pace than as expected. And even it change the philosophy that over time the expansion would be slow-down.

- 2- The nature of dark energy is considered the most mysterious one in cosmology as it does not emit, absorb light and can not be directly observed.
3. Scientist continue to study the dark energy through various means including galaxy surveys, supernova and rotation.

(c)

Mitochondria-

Mitochondria is referred as the 'powerhouse' of the cell due to their critical role in the energy production.

Structure of Mitochondria:-

1. The structure of mitochondria is a double layer structure: Outer smooth and permeable and Inner membrane help in chemical reaction.
2. It has Matrix that is the innermost component

containing enzymes, mitochondria DNA (MTDNA), ribosomes and other molecules for mitochondria functions.

Functions of Mitochondria:-

1. The main function of mitochondria is to produce adenosine triphosphate (ATP) the energy currency of the cell. It has play important role in cytric acid cycle where it further break down in matrix producing electron carriers.
2. Mitochondria are involve in various metabolic activities and pathways like carbohydrates, fats and amino acids.
3. They are involved in heat production by disposing brown tissue, they conserve energy from food into heat.

Why it is called power house of the cell?

Mitochondria are termed as the powerhouse of the cell due to their essential role in ATP through cellular respiration. This process not only supply energy to various cellular activities but also support the overall metabolic needs.

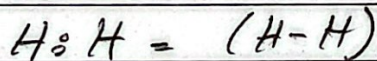
(D)

Covalent Bonds:-

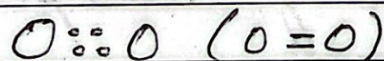
Covalent bonds are type of chemical bonds formed when two atoms share one or more pairs of electrons. This sharing allows an atom to attain a full outer shell of electrons that is more stable.

Types of Covalent Bonds:-

Single Covalent Bond:- In which covalent bond involves the sharing of one pair of electrons between two atoms.



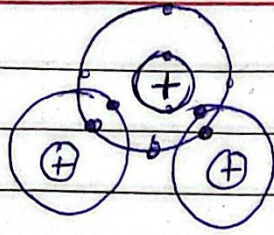
Double Covalent Bond:- In which bond involves the sharing of two pairs of electrons between two atoms.



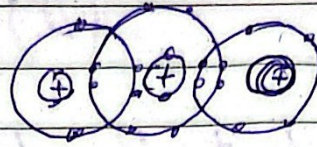
Triple Covalent Bond:-

In this bond involves in the sharing of three pairs of electrons between two atoms.

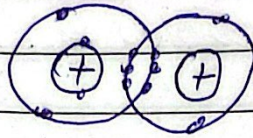




Single Covalent Bond



Double Covalent Bond



Triple Covalent Bond

Qno-03

Noise pollution:-

Noise pollution is considered as unwanted or excessive sound that affects the health of human and other organisms. The outdoor noises of machines, traffic and commercial areas agitate the people.

Harmful effects of Noise pollution:-

Noise pollution has many harmful effects that disturb the well-being, some of them are discussed below.

1. Excessive or loud sound can damage the hair cells in the ear, leading to permanent hearing loss.

2. Noise pollution especially in busy areas like markets or commercial lead to the disturbance of sleep cycle.
3. Constant exposure to noise results in stress and anxiety. That affect the work life and create a chaos in individuals life.
4. Excessive noise can mask important sound like sirens or alarms, increasing the risk of accident especially in urban areas.

Solutions:-

1. Urban planning zoning regulations that separates residential areas from noisy industrial areas.
2. Sound barriers like sound proof walls along highways or railway stations to block the sound reaching to people. OR plant trees and shrubs, which can help absorb sound and provide natural buffer.
3. Traffic management is one of the key aspect by using noise-reducing asphalt. For construction of roads will minimize the fine noise.

9. Public awareness and education is vital to encourage them to practices that reduce noise, just like avoid honking much in traffic.

(B)

What is fiber:-

Fibers are significant for human diet. Fiber are characterized by flexibility and fineness. They are made up of ~~and~~ macromolecules referred as polymers.

Importance of fiber in diet:-

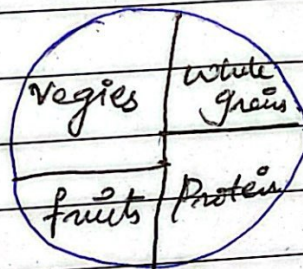
Fiber is considered an important part of a healthy diet as it has many benefits. Some of them mentioned below.

1. It is good for the healthy gut as it prevent constipation.
2. Fiber help in balancing blood sugar level.
3. Fiber reduce the risk of cancer as it is protective against colorectal cancer cells.

It also helps in reducing weight by keeping one healthy and fit.

How would be a platter of food considered balanced.

Platter of food must have everything include vegetable, carbohydrates, protein rich food and some healthy fats.



That's how a healthy platter would look like along with a glass of water accompanying.

(C)

Drinking Water Quality:-

Drinking water Quantity refers to the characteristics of water that make it safe and drinkable for human consumption. Maintaining high standards of water is essential for public health as

Contaminated water can lead to serious diseases.

Key aspect of drinking water:

1. Color may identify the water as drinkable.
2. Odor of the water as it should not have any unpleasant smell in it.
3. Taste plays a significant role in identifying standing water.
4. PH levels and nutrients should be in balance.
5. Drinking water should be free from harmful organisms like pathogens and bacteria.

Standard and Guidelines:-

1. WHO gives comprehensive guidelines by highlighting that water should be treated appropriately and guidelines must be followed to maintain safe water.
2. The United States follows standard as it needs to be free from any heavy metals and the taste and odor should meet standards of drinkable water.

Routine testing and monitoring are essential for public health and safety.

(1)

Lithosphere:-

Lithosphere is the solid outer layer of the Earth. It has crust and uppermost part of the mantle. It plays a crucial role in geological processes and is fundamental to the structure and behaviour of Earth.

Structure of Lithosphere:-

Crust:- Outermost layer of the lithosphere and is relatively thin compared to the mantle. It has two types, continental crust which is thick and dense. On the other hand it has oceanic crust thinner and denser.

Upper Mantle:-

The upper part of the mantle extends from crust down to depth 255 miles. It contains solid rock that can behave in semi-plastic manner.

Lithosphere is divided in tectonic plates.

Rocks:-

Rocks are solid made up of either the cluster of mud or more rocks that makes it more rigid. It has three types of rock.

1. **Igneous Rock:-** It is made up of solidification and cooling of magma or lava. It form with or without crystallization either found below or on the surface of the surface.
2. **Sedimentary rock:-** are formed by the deposition and subsequent cementation of that material with bodies of water and surface of earth. → Sandstone.
3. **Metamorphic Rocks:-** make up a large part of the Earth's crust and are classified by texture and by chemical mineral assemblage. examples are Marble, Slate.

Minerals:-

Minerals are naturally occurring chemical composition of substance. they are inorganic in nature and defined by their chemical composition. Some of the examples of minerals are :-
Iron, magnesium, phosphorus, potassium, calcium, sodium, copper and many more.