

DATE: **General Instructions**

1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings
3. Do not use table for comparison and contrast questions.

4. Draw figures/diagram/flowchart where needed.

5. Start new question from fresh page.

6. Write unit of the answer in ability section.

7. Explain mathematical steps and the reasoning for better score.

8. Change colour scheme for references to give them more visibility.

9. Manage time well.

10. Wide page borders are discouraged.

Should be reasonable.

11. Avoid writing wrong references.

12. Give more weightage to expressedly asked part/s of the question.

Q. Answer (10)

Let age of the son is 'x' and father's age is y.

Age of father after five years ago

Son = x - 5

Father = y - 5

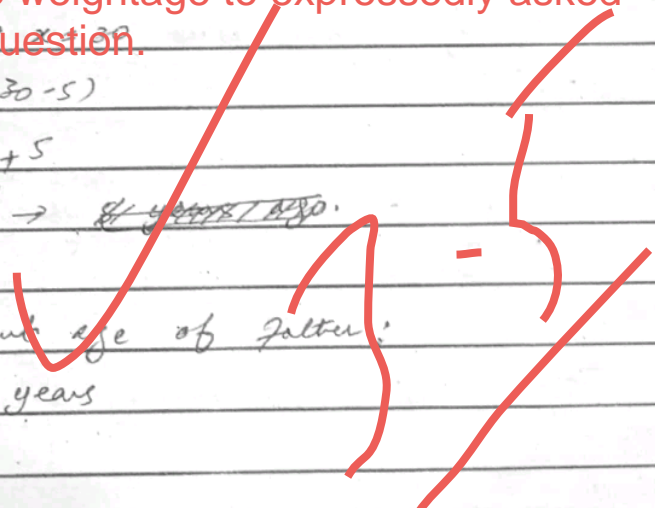
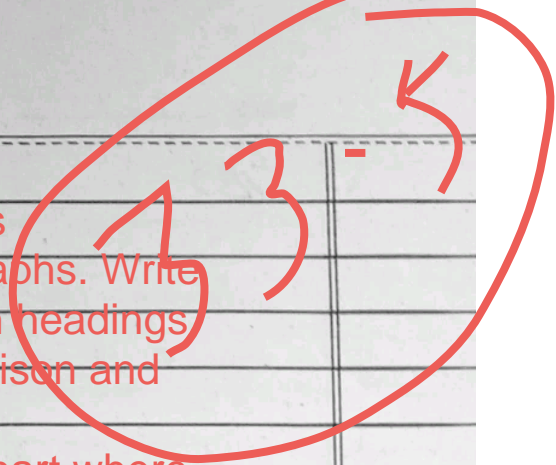
Age of father was three of his son five years ago:

$$y - 5 = 3(x - 5)$$

$$y = 75 + 5$$

$$y = 80 \rightarrow \text{80 years ago}$$

So the current age of father:

$$y = 80 \text{ years}$$


(B)

Tax on Income that a man pays is 10% and tax amount is Rs. 1500.

Income \times Percentage of income tax = income tax.

$$\text{Income} \times (10\%) = 1500$$

$$\text{Income} = \frac{1500}{0.1}$$

$$\boxed{\text{Income} = \text{Rs. } 15000}$$

Income of a man is Rs. 15000.

(C)

Sum of 6 numbers is x and removed number is y .

Sum of 6 numbers (when avg is 20).

$$= 6 \times 20$$

$$= 120$$

Avg of nos. after removing a number is 15, 50.

$$x - y = 5 \times 15$$

$$120 - y = 75$$

$$y = 120 - 75$$

$$\boxed{y = 45}$$

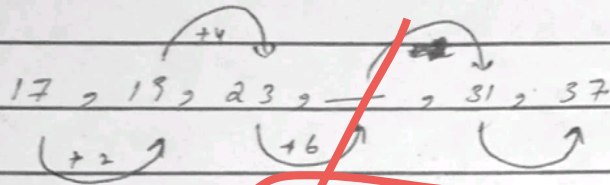
\hookrightarrow Removed number.

(D)

(i) 8, 4, 32, 7, 8, —



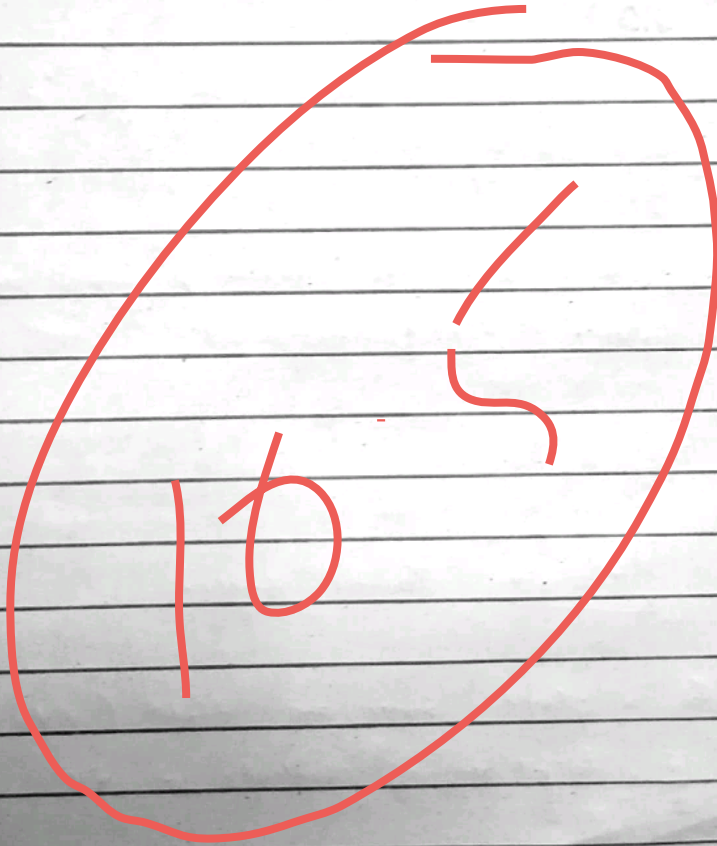
(ii) 17, 19, 23, —, 31, 37



17, 19, 23, —, 31, 37

Arrows and numbers: $+2$ (between 17 and 19), $+4$ (between 19 and 23), $+6$ (between 23 and —), $+8$ (between — and 31).

The missing number is 29.



10

Q NO# 07

(A)

Diameter of a round table (circle) is 7m, then the distance walked by a person:

$$= \pi \times d$$

$$= 3.142 \times 7$$

$$= \underline{\underline{21.99 \text{ m}}}$$

↳ Distance walked by a person.

(B)

Let's Boys be represented by 'x' and girls with 'y'

18 boys are over 160cm, which are $\frac{3}{4}$ th of the boys. $(\frac{3}{4} \times x) \text{ Boys} = 18$

$$\frac{3}{4} \times x = 18$$

$$\boxed{x = 24} \text{ Total boys.}$$

In a class boys are $\frac{2}{3}$ rd (24)

$$\frac{2}{3} \times \text{total no. of students} = 24$$

$$\frac{2}{3} (x + y) = 24$$

$$24 + y = 36$$

DATE: ___/___/___

$$y = 36 - 24$$

$$y = 12$$

↳ Number of girls in a class.

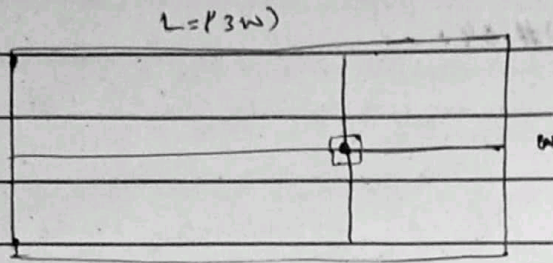
(C)

IQ stands for intelligence quotient, which is the measure of cognitive abilities and skill of problem solving. On the other hand, emotional quotient is a person's ability to comprehend and control and regulate his/her emotions.

Factors which affect IQ:

- (1) Environment
- (2) Proper Nutrition
- (3) Education
- (4) Culture
- (5) Social and Economic factors
- (6) Sleep (Rest)
- (7) Biological factors
- (8) Stress
- (9) Access to technology
- (10) Cultural stereotypes and Biases.

(10)



Sum of the perpendiculars is 240 cm :

$$W + 3W + W + 3W = 240$$

$$8W = 240$$

$$W = 30 \text{ cm} \rightarrow \text{width}$$

$$\text{Length} = 90 \text{ cm}$$

~~Perimeter of Rectangle~~

$$= 2(L + W)$$

$$= 2(30 + 90)$$

$$\text{perimeter} = 240 \text{ cm}$$

SECTION (A)

Q NO# 04:

(A)

AI has unleashed revolution across the world, reshaping industries, lifestyles, and possibilities. From virtual assistants doing daily tasks to AI based diagnostic tools used for medical purposes, has tremendous impacts. Self driving delivery system/ robots which navigate streets and uses smart algorithms to optimize the process. The involvement of AI has propelled an era of unparalleled efficacy, accuracy, and personalization. Its self-serving ability to analyze vast amounts of data, automate tasks, and learn from patterns. AI has now become indispensable driving force of invention and innovation. We should incorporate and embrace AI's potential, and collaborate with intelligent machines, shows unprecedented advancement in sectors like healthcare, transportation, and education, etc. The world has changed forever, that too, by transformative power of AI.

Poor presentation. Diagram/flowchart missing.
No subheadings

(B)

In a small village nestled amidst arid lands, water scarcity had become a grave concern there. The villagers realized the worth of water as their well dried, united to find a solution. They formed a committee seeking innovative measures. Firstly, they implemented rainwater for harvesting, capturing every drop of to fill their wells during monsoon. They educated the community on water conservation, and told them about the importance of water. To reduce agricultural water consumption, they introduced drip irrigation techniques. Additionally, they partnered with NGOs to dig borewells and install water purifiers. Awareness campaigns were launched urging responsible water usage. The village then flourished, witnessing ~~restored~~ lush fields ~~and~~ green fields. Through their collective efforts, the villagers turned the tide of water scarcity, valuing every precious drop and ensuring a sustainable future for generations to come.

~~Vaccines~~

(C)

Vaccines are biologically prepared which helps our immune system to recognize and then defend against infectious disease. It stimulates body's natural immune response by injecting harmless form of disease-causing specific components in it. This exposure helps immune system recognize the pathogen (an organism causes disease to its host), develop immune system, and remember to how to respond to future encounters with disease-causing agents.

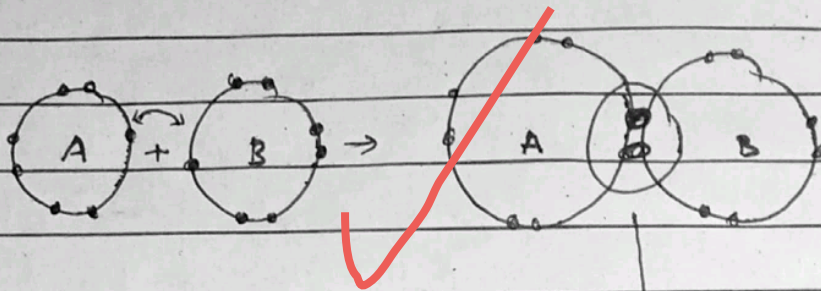
TYPES:

- ① Polio Vaccine.
- ② Varicella (Chickenpox) vaccines
- ③ HPV and HBV vaccines
- ④ Covid vaccines (AstraZeneca, The Johnson and Johnson's vaccines).

(D)

Covalent Bond.

A chemical bond that involves the sharing of electrons (e^-) to form electron pairs between atoms.

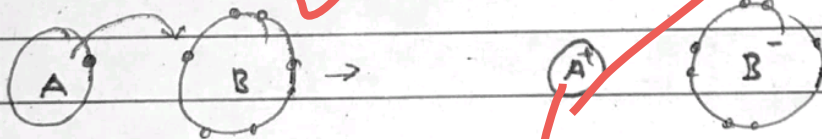


Sharing of available valence e^- s.

Eg: H_2O .

Ionic Bond.

A chemical bond which is formed by chemical connection in which one atom loses valence electrons and gains them from another atom.



Eg: $NaCl$.

Q NO# 03

(A)

Avalanche

A rapid flow of snow, ice, and debris down from a mountain or a slope. It is a natural disaster that can be extremely dangerous and destructive. They are triggered by snowfalls, slope steepness, temperature changes, and human activity as well. Other causes might be earthquakes, vibration and even overloading.

Types of avalanche:

① Loose Snow Avalanche:

One of the most common occurring specially on steep slope and after fresh snowfall.

② Powder Snow Avalanche:

It actually is mixture of loose snow and slab snow avalanche in which bottom half is of slab and above which is cloud of powdered snow.

③ Slab Avalanche:

It is a large ~~thick~~ thick and dense slab of ice fall down the slope. It can cause considerable damage.

④ Wet Snow Avalanche:

- Diagram?

One of the most dangerous avalanche, that travels slowly due to friction and collects debris, very easily. It is comprised of water ice and snow

but it speeds up as it goes down.

Examples

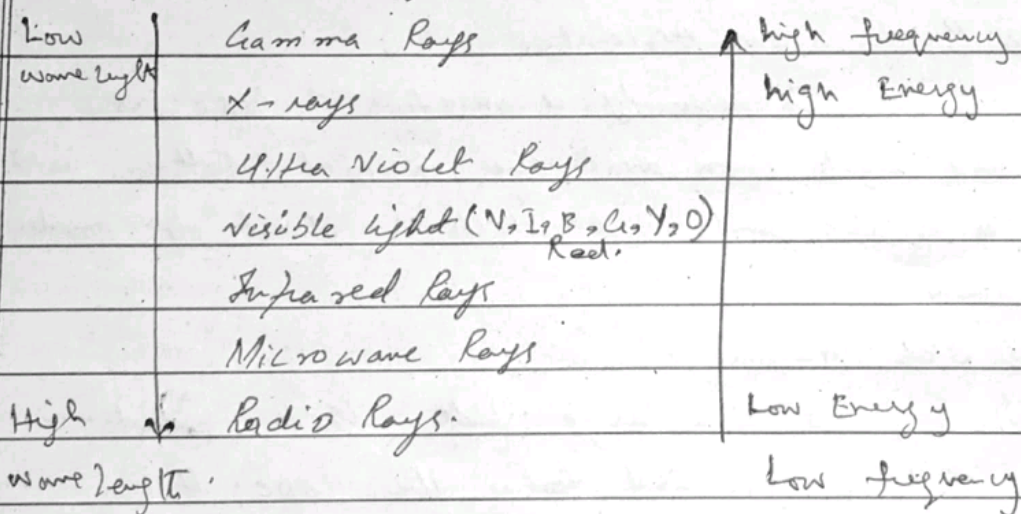
- ① Mount Everest Avalanche ~ 2014.
- ② Tunnel Creek Avalanche ~ 2012
- ③ Avalanche on Mount Huascaran ~ 1970.

(B)

Electromagnetic Radiation

A form of energy that travel through space in the form of energy. It consists of different ranges of wavelengths and frequency.

Spectrum of EM radiation.



① Gamma Rays

High Energy, high frequency
Short wavelength.

② X-Rays (Roentgen Rays).

Frequency \propto Energy

UV $< f <$ Gamma Rays.

UV $< E <$ Gamma Rays

Wave length:

Gamma $< \lambda <$ UV

③ UV Rays

Energy \propto frequency.

visible light $< f <$ X-rays

visible light $< E <$ X-rays

Wave length:

X-R. $< \lambda <$ visible light

④ Visible light.

Energy \propto frequency

UV $< E >$ Infrared

UV $< f >$ Infrared

Wave length:

Infrared $< \lambda >$ UV

⑤ Infra Red Rays

Energy and frequency

v. light $< E >$ IR wavesv. light $< f >$ IR waves

Wave length:

IR waves $< \lambda >$ v. light.⑥ IR waves:

Energy and frequency

IR waves $< E >$ Radio wavesIR waves $< f >$ Radio waves

Wave length:

Radio waves $< \lambda >$ IR waves⑦ Radio wavesEnergy \sim leastfrequency \sim leastWave length \sim Highest.

Note : Question Paper was uploaded
40 mins late. That's why answers
were short.