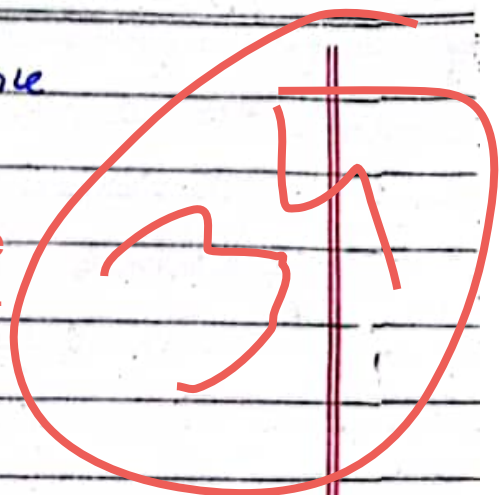


General Science and Ability

General Instructions

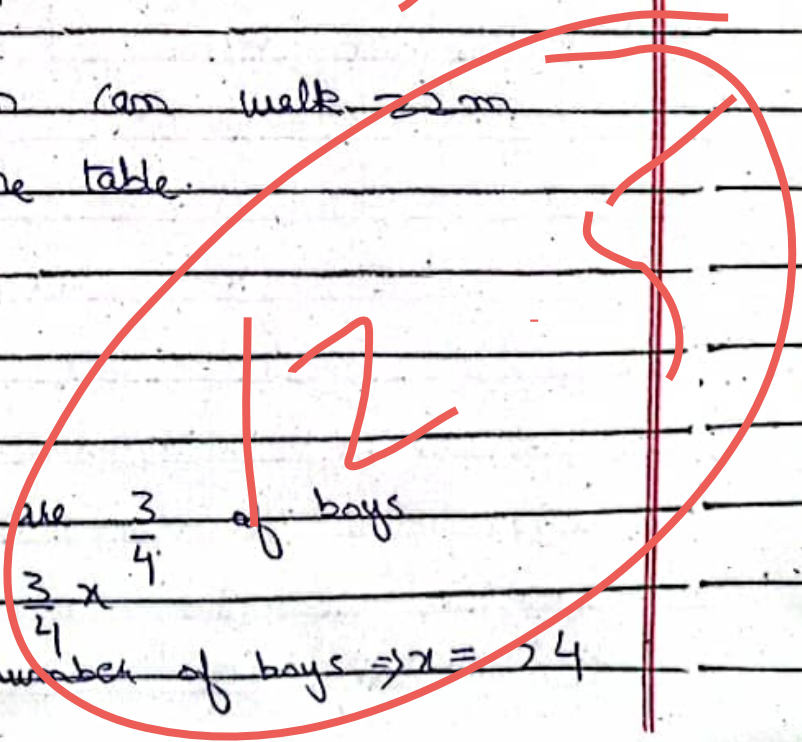
1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings.
3. Do not use table for comparison and contrast questions.
4. Draw figures/diagram/flowchart where needed.
5. Start new question from fresh page.
6. Write unit of the answer in ability section.
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 expressly asked part/s of the question.



Q.2.
 a.
 solution:
 circumference of a circle = $2\pi r$
 \Rightarrow radius $\frac{7}{2} = \frac{D}{2} = 3.5$

$2 \times \left(\frac{7}{2}\right) \times \left(\frac{7}{2}\right) = 22\text{m}$

\therefore A man can walk 22m around the table.



Sol:-

18 boys are $\frac{3}{4}$ of boys

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

\therefore Total number of boys $\Rightarrow x = 24$

Now

24 boys constitute $\frac{2}{3}$ of the class.

∴ Total students in the class is

$$\frac{2}{3}y = 24$$

$$y = 36$$

To find total No. of girls

Total strength of the class - No. of boys

$$\rightarrow 36 - 24 = 12$$

∴ Total number of girls in the class is 12

c. Distinguish b/w IQ & EQ.

IQ ∴ IQ stands for Intelligence Quotient. It measures the intellectual reasoning and problem solving skills and knowledge of an individual. A standardized intelligence test is conducted to ascertain the level of IQ a person possesses.

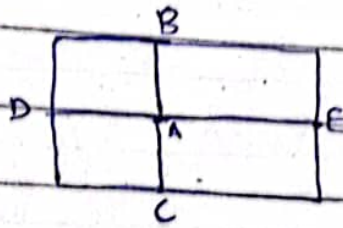
Score in the IQ test around 100 are considered average. While a ~~so~~ score greater than 130 is considered above average. The highest score ever recorded is 228.

Factors affecting IQ?

EQ :- EQ stands for emotional quotient.

- It is the ability of a person to process emotional awareness
- EQ depends on
 - i. Social skills :- The ability to communicate and form relationships with other people
 - ii. Self awareness :- to be aware of oneself and ones limitations and capabilities
 - iii. Self regulation :- To regulate ones behaviour according to the environment
 - iv. Motivation :- To be motivated for new challenges
 - v. Empathy :- to empathize with others in grief, happiness etc.

d.



4 perpendiculars are drawn to pt A
 $\Rightarrow BC = \text{width of the rectangle}$
 $DE = \text{length of the rectangle}$

$$\Rightarrow BC + DE = l + w = 240 \text{ cm}$$

$$\text{Perimeter of rectangle} = 2(l + w)$$

$$\Rightarrow \text{Perimeter} = 2(240)$$

$$\text{Perimeter} = 480 \text{ cm}$$

Q4: 5 years ago

Solution :-

5 years ago age of Father was
 3 times age of son.

$$\text{Age of son presently} = 30 \text{ years}$$

\Rightarrow Let's age of Father be x

$$\Rightarrow x = 3(30 - 5) \Rightarrow 75$$

$$\therefore \text{Age of father 5 years ago} = 75$$

3

Qc Current age of Father = $75 + 5$
 $= 80 \text{ years}$

(b) Man pays 10% income tax = 1500 PKR
 If 1500 is 10% of the income
 \Rightarrow 1% of the income is $\frac{1500}{10} = 150$.

Total income = 100% = 150×100
 $= 15000 \text{ PKR}$

di 8, 4, 32, 7, 5 \Rightarrow 35

ii 17, 19, 23, 29, 31, 37
 Reason?

SECTION A

Q4 Artificial intelligence ?

Definition :- Artificial intelligence is a branch of computer science concerned with building machines which can perform the types

of work that typically requires human intelligence to perform, eg problem solving, logical reasoning, making prediction etc.

How is it different from human intelligence / How does it work.

It typically tries to mimic human intelligence to perform functions like logical reasoning problem solving etc but it lacks the emotional intelligence of human brain.

Working :- It requires large sets of data which it sum in iterations. It learns the patterns of data and predicts the next outcome. eg for AI to generate the shape of a human face, it will require a large set of images containing the person's face. It will recognize the pattern of the face from the sample images thereby

generating a new image on its own.

The accuracy of AI depends on the data samples accuracy. If the data is not accurate, AI will not be able to generate an accurate outcome.

How AI has revolutionized the world.

AI has revolutionized the world by the immense possibilities it has brought. It is being integrated into every branch of science.

- i Industry :- Automation of industry has been made possible by AI.
- ii Medicine :- It is being used in research of medicine and to find cures for incurable diseases.
- iii Driverless cars :- AI systems are being integrated into automobiles to discern traffic, and automatically drive cars from one point to

- iv. another with legs sharp precision
Surgery:- AI robots are being used to perform surgeries.
- v. Mining :- AI helps humans to perform work in harsh environments without any breaks.

From foodPanda to Amazon every app on the mobile phone uses some kind of AI to predict what the customer is going to buy next and also give suggestions according to one's preferences.

AI assistants like SIRI and tools like CHATGPT are helping humans make schedules, perform work and solve problems with greater efficiency. In short AI is the future and it will assist humanity's development at a breakneck speed.

Q4 b Water scarcity:-

Water is the life blood of human civilization. Every civilization in the history is associated with the name of the river e.g. Indus valley civilization. This shows the importance of water for humanity.

Unfortunately due to climate change and environmental degradation, this source is drying up. Pakistan's water resources has dropped below $1000m^3$ per capita which makes it a water scarce country (World Bank report). Therefore measures need to be taken before the water dries up.

Following are measures that can help in mitigation of the crisis

- ① Building new dams:- Pakistan water availability ~~is~~ in its reservoirs is 30 days. Building

new reservoirs can help conserve water and also mitigate the disasters caused by floods. Every year more than 130 MAF water flows through Pakistan's rivers into the Indian ocean. This water can be saved for consumption.

ii. Lining of canals:- Although it may sound like an underrated measure but more than 30 MAF of water is lost because canals are not lined. It is a cost effective measure compared to dam and can save more water than what is presently stored in all of Pakistan's dams combined.

iii. Using modern agricultural techniques
 Modern agricultural techniques like drip irrigation are less water intensive. According to IRSA Pakistan uses

90% of its water for agriculture
 This figure can be reduced to
 half if modern techniques
 are used.

iv. Water conservation awareness:-

Through public awareness campaigns
 and advertisements

v. Billing of water:- Billing of the
 water resource may reduce the
 consumption

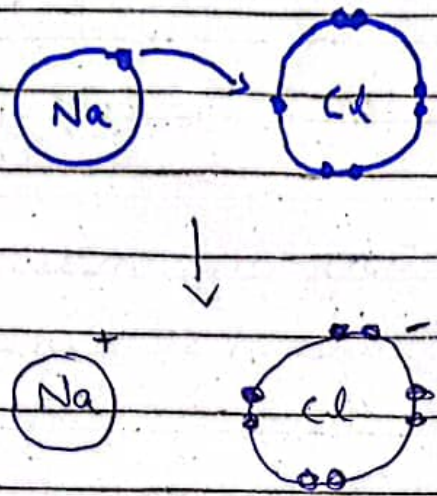
vi. Rain Water Harvesting:- The
 rain water can be stored
 and used later.

vii. Reducing the number of taps
 Through legislation the number
 of taps ~~can~~ for a household can
 be limited and regulated

Conclusion:- To mitigate water
 scarcity, the above mentioned
 measures can be implemented.

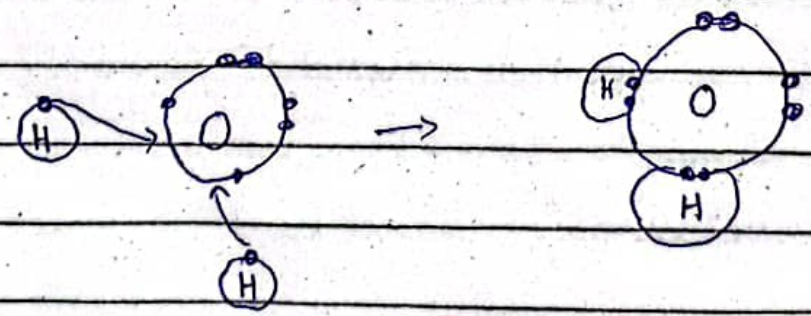
It may prove beneficial in saving
 water for future generation

Q4d. Ionic Bond :-



Ionic bond is formed when transfer of electron occurs to form a molecule. Na transfers electron from its outermost shell to Cl.

Covalent bond :- Covalent bond is formed by the sharing of electrons.



Explain a bit more.

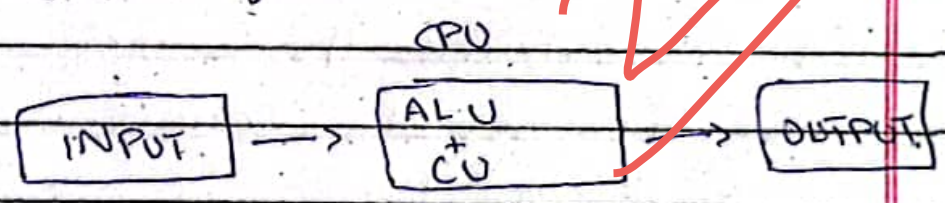
Oxygen requires 2 electrons in its outermost shell which are supplied by 2 Hydrogen atoms.

Q5 What are computer buses. CPU?

Bus: A bus is a set of cables which connects different components of CPU with each other. The purpose of the bus is to transfer data

Types?

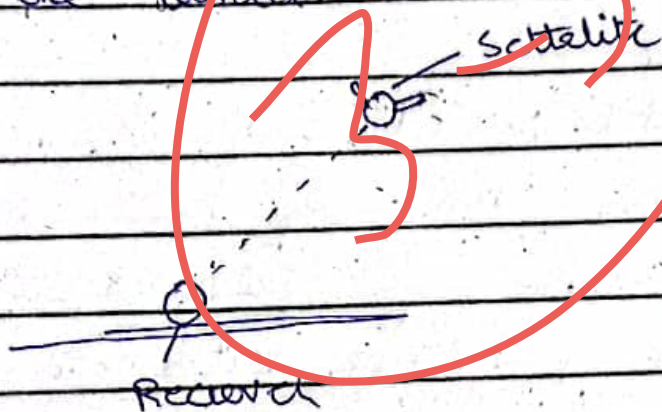
CPU: CPU is also called the brain of the computer because it is responsible for performing Arithmetic and logical functions



- i. Input is given by the user using keyboard etc.
- ii. The CPU processes the data and performs the desired operation
- iii. After performing operation, the CPU transmits the output to an output device eg monitor

Q.5

GPS :- GPS stands for global positioning system. It is used to ascertain the exact location of its receiver anywhere in the world.



Satellites detect the exact location of the receiver on ground in terms of coordinates.

Applications :-

GPS devices are embedded in all modern phones and cars.

It can be used to navigate across maps with pinpoint accuracy.