

# General Science and Ability

Date June-15-2023Name: Beenish Talpur

Write complete logic and steps in math portion

Do proper calculations

Insufficient length for theory portion

Increase length

Add headings

Draw diagrams

Paper presentation is fine

Question NO: 6

a) Volume of a football :

Given diameter = 12cm

$$\text{Radius} = \frac{d}{2} = \frac{12}{2} = 6\text{cm}$$

$$V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} \pi (6)^3$$

$$V = \frac{4}{3} \pi (216)$$

$$V = \frac{4 \times \pi \times 216}{3}$$

$$V = \frac{864 \pi}{3}$$

$$V = 288 \pi \text{ Answer}$$

904

b)

Currently, Father = 4 x Daughter

in next 5 years Father = 3 x Daughter

then, in next 5 years Father = ?

Assuming that the age of the daughter is 10 years currently.

so Father =  $4 \times 10 = 40$  years  
 in Next 5 years daughter will be  
 15 years old so

$$F = 3 \times D$$

$$F = 3 \times 15 = 45$$

in next 5 years the daughter will  
 be 20 years old.

From above calculation, the rate of  
 growth in age of father is fixed 5 years  
 assuming that the age of father  
 after next 5 years is

$$45 + 5 = 50$$

so

$$d = 20, F = 50$$

$$F = 2.5 \times 20 = 50$$

so

Father will be 2.5 times the age  
 of his daughter.

Answer.

a)

Current Value = 8748

let the current value be  $x$

$$8748 = x \left(1 - \frac{10}{100}\right)^3 = x \left(\frac{90}{100}\right)^3$$

$$x = \frac{8748 \times 1000}{729} = \boxed{12000 \text{ Ans}}$$



Quest-NO: 7

a) Avg of 7 consecutive numbers is 20,  
find the largest num.

Sol.

let the numbers be.

$$x + (x+1) + (x+2) + (x+3) + (x+4) + (x+5) + (x+6)$$

$$\frac{7x + 21}{7} = 20$$

$$7x + 21 = 140$$

$$7x = 119$$

$$x = 17 \rightarrow \text{smallest number}$$

$$x + 6 = 17$$

$$\boxed{x = 23} \rightarrow \text{largest number}$$

b)

A said C is my cousin

C is A's cousin and

D is also A's cousin

but since D and C are  
not brothers so they might be

Cousins.

D and C are Cousins

c)

Sequence = 7, 12, 19, 28, 39, 52

(Section - A)

Question 2:

a)

RAM

ROM

RAM stands for Random Access memory

ROM stands for Read only memory

RAM is a volatile memory

ROM is a non-volatile memory

RAM can be read and written multiple times

It can be written only at the time of manufacturing

It is a temporary memory

It is a permanent memory



### Network

Connection of two or more than two devices or computers is called network.

The area of a network can be limited

Less devices are connected to a network.

Network can be private and secure

### GPS

GPS stands for Global positioning system.

GPS is used for navigation

GPS uses satellites signals to provide location

### Internet

Multiple networks connected together around the globe is known as internet

The area of internet is not limited. It is also called global network

Millions of devices can be connected to form internet

Internet can be very insecure and public

### GIS

GIS stands for Geographic Information system

GIS is used for mapping

GIS gets data from GPS.

It is used by common men for navigation

~~It is used by government mostly for weather forecasting and data gathering for lands etc~~

### Byte

~~Byte is a computer memory unit~~

~~8 bits make one byte~~

~~It is third smallest unit of memory after bit and nibble~~

### Nibble

~~Nibble is also a computer memory unit~~

~~4 ~~bits~~ 4 bits make one nibble. One nibble is half a byte.~~

~~It is second smallest unit of memory after bit.~~

### Natural Satellite

~~Natural satellites are celestial bodies in universe that revolve around planets.~~

~~Example is moon~~

### Artificial Satellite

~~Artificial satellites are man-made sat machines sent in space to orbit around earth~~

~~Example is communication satellites~~



b)

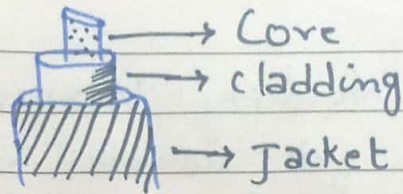
## Optical fibers:

Optical fiber is a physical communication media used to transfer information from one place to another using light pulses. The optical fiber is made of glass or plastic fibers which are thinner than the human hair.

An optical signal carrying information is transferred via an optical source from sender side which converts an electrical signal into optical signal. Data in optical fibers travel as light signals, when it reaches the receiving end, the optical signal is then converted into electrical signal at receiving side.

The thin fiber in the middle of the optical fiber is called core. The outer layer protecting the core is known as cladding. The cladding is responsible for Total Internal Reflection (TIR), a phenomena which prevents the signal loss in an optical fiber. The outermost layer of optical fiber is known as jacket which is ~~an~~ usu a thick insulator. It protects optical fibers from environmental damages. Fiber optical fiber is a fastest physical communication media as the data travels at speed of light.





### c) Water Soluble Vitamins:

Water soluble vitamins are those vitamins which are soluble in water and are absorbed immediately by the tissues. The excessive amount of water soluble vitamins is released by body via urine. The excess of water soluble vitamins is not stored by body, hence these vitamins need to be consumed daily to complete the bodily requirement. Vitamin C and Vitamin B complex are water soluble vitamins. These are needed to be consumed daily to fulfill the bodily requirements. Vitamin C deficiency can cause bleeding gums while the deficiency of Vitamin B complex can cause beriberi or anaemia.

### Fat Soluble Vitamins:

Fat soluble vitamins are those vitamins which are present in blood stream. These vitamins require fats to get absorbed by body. The excess amount of these vitamins is stored in liver. They are not supposed to be consumed daily as more consumption of fat soluble vitamins can cause

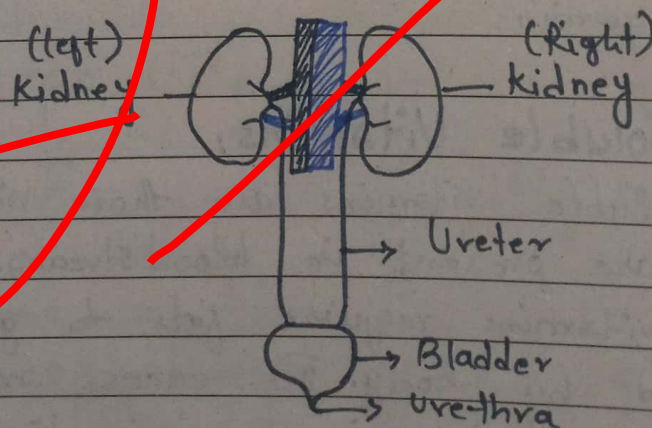


vitamin toxicity. Vitamins D, K, A and E are fat soluble vitamins. Vitamin D deficiency can cause rickets in children. Vitamin K deficiency can lead to anaemia. A deficiency of vitamin A can cause night blindness, while Vitamin E deficiency can lead to infertility.

d)

## Kidneys

Kidney are responsible to balance fluids in human body. The main function of kidney, is to remove waste products by filtering ~~blood~~ blood from toxins and releasing toxins through urine. High blood pressure and diabetes can cause kidney failure.



Question No: 3

a) **Black Hole:**

Black holes are formed when a dying star explodes. This explosion is termed as supernova explosion. The remnants of the star start moving fast due to extremely high energy produced at the time of explosion. Which is why the gravitational force of black holes is extremely strong. Most galaxies have black holes as their center of gravitation.

b) **Cyclones:**

Cyclones are formed due to rising of hot air over the ocean surface. It consists of a calm center known as "Eye" and air around the eye are winds blowing in spirals. Cyclones are formed over warm waters. A cyclone is a continuous high speed wind that moves in circular motion. Cyclones are so strong that they can destroy everything coming their way. Cyclones can be prevented by improving forestation to control wind. Biparjoy is an example of cyclone.



### c) Causes of Floods:

There are many different causes of floods. When rain occurs for a prolonged period of time, it can cause infrastructure and material loss. When heavy rainfall occurs for a short period of time, it can also cause so much of material loss.

Due to global warming and temperature rises, ice on the glaciers melt rapidly which increases the flow of water in streams and rivers. The excess water in rivers can slide into surrounding land areas causing flood.

There are many water control structure such as dams, failure of which can cause flooding.

d)

### Energy in Sun:

The inner most part of the sun which is known as core is responsible for all the energy produced in sun. A process of Nuclear fusion reaction occurs at the core of sun which produces energy. The temperature of the core is 15 million degree Celsius.

## Gravity of Sun:

The sun is the heaviest celestial body in our solar system. It contains about 99% of the total mass of the solar system. Mass of the sun is responsible for gravity of sun. The heavier the body, the greater the gravitational force of that body.

## Solar Wind:

Solar wind is a continuous flow of charged particles released from the sun's corona. Solar winds travel through along the electromagnetic field lines of the sun.