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PART-II (Section-A)

Q. NO #3.

(C) Causes of floods:

There are many causes of floods. Following are the main causes which cause floods.

(i) Melting of glaciers

Glaciers are the trapped snow on mountain ranges. With the increase of temperature they start melting. The higher the degree of temperature the higher will be the melting rate. Hence, this water gushes towards towns and cities causing floods.

(ii) Obstructing the water flow:

Due to growing population there is a lack of area for settlement in some areas of Pakistan. Therefore, some people construct their homes near the rivers, canals, or channels. Which sometimes decelerates the

smooth flow of water. Similarly, the previous canals and rivers are being narrower due to mismanagement of people. In this way sometimes higher precipitation result in floods and causing destruction.

(ii) Ineffective earth-filled dams:

There are many earth-filled dams in Pakistan. As being cost effective, many dams are constructed by using soil. ~~However,~~ they store a plenty of water; however, they don't have much storage capacity. Thereby, very soon result in ~~det~~ damage of dams and causing floods. Moreover, quality material is not used in such dams which further worsens the condition.

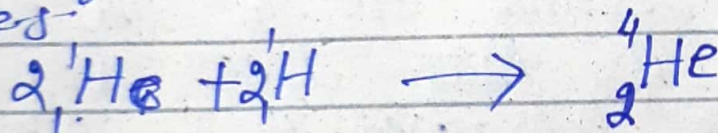
(iv) Government's Lack of Management:

Government is mainly responsible for floods' causation. As government is responsible for ensuring available funds for flood prevention, adaptation and Mitigation Mechanism. Similarly, no pre-awareness campaigns

are initiated & on behalf of government which can ~~also~~ help aware the people for a rapid response.

(d) How energy is produced inside sun?

Sun is a mighty star containing a hefty amount of Hydrogen gas and Helium gas. The Hydrogen gas converts into a Helium (He) gas through a process of reaction called Nuclear Fusion. Therefore the main source of sun's energy is nuclear fusion



Factor Responsible for gravity of Sun:

Sun, including Hydrogen and Helium, also contains some other elements like iron (Fe) Nickel and Chromium, etc. which are metallic in nature and are mainly responsible for the gravity of sun

Solar wind

Solar wind is actually the rapid flow of electrons and other ions in chromosphere of sun. Their speed is much high and cause solar winds.

(b)

Formation of cyclones

Cyclones are formed by temperature differences in Pacific Ocean and Indian Ocean region. Due to direct sun light on oceanic surface the temperature of that area rises while air pressure decreases. To overcome this, air from sideways rushes to fill this gap. Rapid rush of such air from all sides causes the air to whirl fastly. This whirling air is called cyclone which cause huge destructions as they have much stored potential energy.

(a)

Formation of Blackholes

Stars have fuel for a limited period of time. When their fuel shoots, they go through some stages like red giants and super novae, etc. Finally they end up in the formation of Black holes. These are dark part of nature having immense gravitational energy. They can pull everything and engulf it. Even light cannot escape the gravitational force of black holes.

Q. No. 4 (a)

Goals of Cop 26 & Cop 27:

Conference of parties are held every year ~~through~~ to have discussions and future frame works to reduce the climate change. Cop 26 held online due to Covid-19 pandemic. It mainly focused on reducing the CO₂

emission to get a carbon negative target. For this purpose many countries revealed their targets that they will limit the CO₂ emission to zero levels. For instance China and USA stated that by 2050 they will achieve carbon negative target. While Pakistan did not show her target, yet owed to follow the pursuit to limit its CO₂ emission.

While COP-27, which occurred in Sharm-el-Sheikh, Egypt, was mainly focused on current scenario of floods causing huge destructions throughout the globe, especially Pakistan. Moreover, Loss and damage fund was the of the prime importance which was led by Minister of Climate Change of Pakistan, ~~Sherry~~ Sherry Rehman. Through Loss and damage fund, countries will be compensated with funds allocation, who have bore the brunt of catastrophic floods.

Most importantly, climate justice was also the ~~at~~ prime theme and objective of COP 27.

(b)

Solid waste management:

process by which the solid wastes are taken from their points of production to a spot and to manage them in a manner that it might not be responsible for any environmental pollution is called solid waste management.

Methods of Solid Waste Management:

Following are the main methods of SWM.

- (i) **Dumping:** In this process solid waste is dumped under ground soil. A trench is dug in which all solid wastes are thrown. Then layers of soil are deposited on the garbage. Then the soil is levelled by a heavy machine like roller. This process is called Dumping.

Incinerating:

It is another process of solid waste management. In this process, solid wastes are burnt in an incinerator at high temperatures. This process reduces the volume of waste, but does not completely eliminate it.

Composting:

This is another process which is used for solid waste management of small wastes including the peels of fruits and vegetables, leaves, etc. In this process these organic solid wastes are closed in a container for a specific time period. Sometimes leaches or earthworms are also added to them which increase the process of composting. After a few days, a dark brownish material is formed which is called as compost. Compost is then used as fertilizer for the growth of herbicidious plants.

(C) Water pollution

Process by which water is exploited by various factors pollutants to make it dirty and unclean is called water pollution.

Common Causes of Water pollution:

Water pollution is mainly caused by ~~pollutants~~ ~~at land~~ ~~water~~

i) Domestic waste:

Domestic wastes are eliminated through ~~sew~~ sewerage system which add to water and cause water pollution.

ii) Industrial waste

Many heavy metals such as ~~Hg~~ Mercury (Hg), Lead (Pb) and Chromium (Cr) are produced by chemical reactions in industries and factories.

These are also eliminated in fresh water lakes and rivers which then led into oceans. Hence ocean is also polluted.

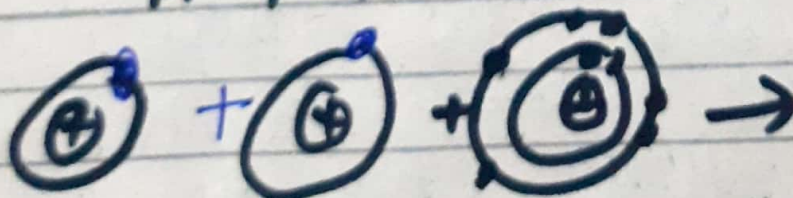
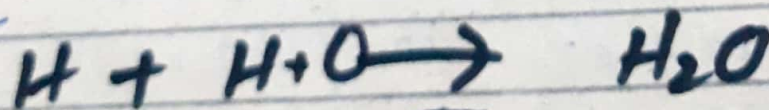
iii) Nuclear waste

Water pollution is also caused by waste produced by nuclear power plants. Such power plants mainly produce radioactive elements which make the fresh water radioactive as well.

(d) Covalent bond in Water molecule

Water having the formula H_2O is formed by combination of two Hydrogen and one oxygen atom via a covalent bond. Both Hydrogen and oxygen are semi-metals. They neither of them completely transfers its electrons. But they prefer to mutually share their valence un-paired electrons to complete their duplet and Octet rule.

e.g.

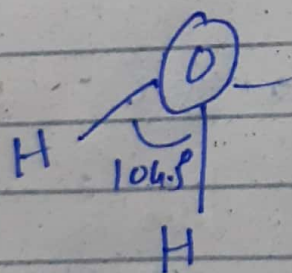




H₂O molecule.

Angular structure of H₂O:

Angular structure of water is due to presence of two lone pairs on oxygen atom. which, according to valence shell electronic pair repulsion theory repel each other. Due to this repulsion bond angle between hydrogen and oxygen atoms changes from 109° to 104.5°
e.g.



Angular
(V shaped)

Section B

Q. 7

Seven consecutive numbers

Suppose = a, b, c, d, e, f, g

average = 20

Largest number = ??

According to formula

A = $\frac{\text{no of elements}}{\text{no of numbers}}$

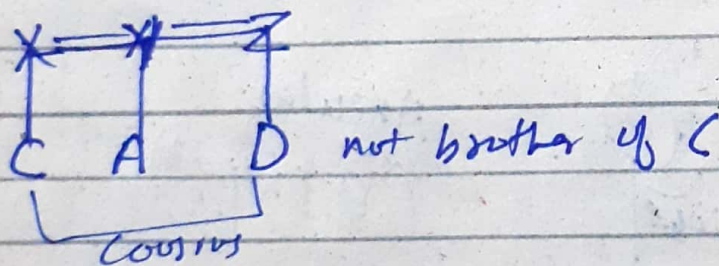
$$A = \frac{a+b+c+d+e+f+g}{7}$$

$$20 \times 7 = a + b + c + d + e + f + g$$

$$140 = 17 + 18 + 19 + 20 + 21 + 22 + \underline{23}$$

Largest number is 23

(b)



both are Cousins

(c)

Find the next number in series.

7, 12, 19, 28, 29, —

$$7, 12, 19, 28, 39 \dots$$

$$\begin{array}{cccccc} \hline & +5 & & +7 & & +9 & & +11 & & +13 & = 52 \\ \hline \end{array}$$

Hence answer will be 52

(d)

Solution:

Let's sum of money is 100

Ratios of A, B, C, D = 5:2:4:3 respectively

Then each of them gets money

Formula =

$$\text{Share of A} = \frac{5}{14} \times \frac{100}{100} = \frac{35.71}{7}$$

$$\text{Share of A} = \boxed{35.71}$$

$$\text{Share of B} = \frac{2}{14} \times \frac{100}{100} = \frac{14.28}{7}$$

$$\text{Share of B} = 14.28 \text{ Rs.}$$

$$\text{Share of C} = \frac{4}{14} \times \frac{100}{100} = \frac{28.57}{7}$$

$$= \boxed{28.57}$$

$$\text{Share of D} = \frac{3}{14} \times \frac{100}{100} = \frac{21.4}{14}$$

~~Sum of all shares~~

If C gets Rs 1000 more than D then what will be the share of B

According to ratios

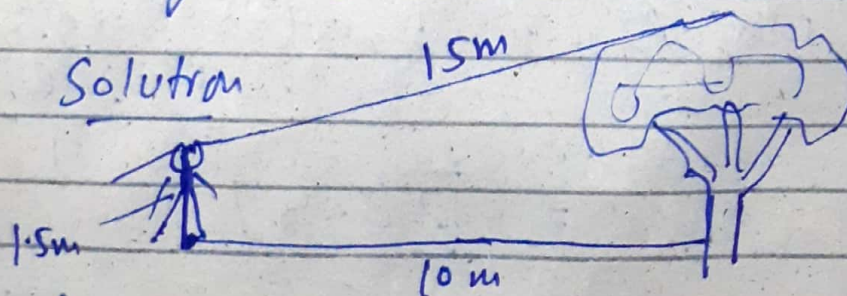
$$C : D = 4 : 3$$

If C gets 4000
D gets 3000
Then B will get only 2000

Q. No. 8

(a) Data

Away from tree = 1.0m
Distances of eyes from his feet 1.5m
Distance from eyes to top of tree is 15m
Height of tree = ?



Hence Height of the tree will be equal to

Total Height = Trees height +
Height of Ali

$$\boxed{16.5\text{m}} = 15\text{m} + 1.5\text{m}$$

Answer = 16.5

(b)

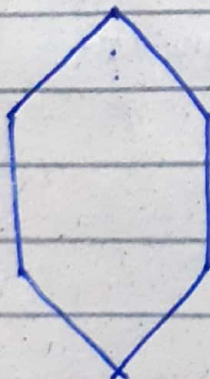
Correct words

Engulf , Snack

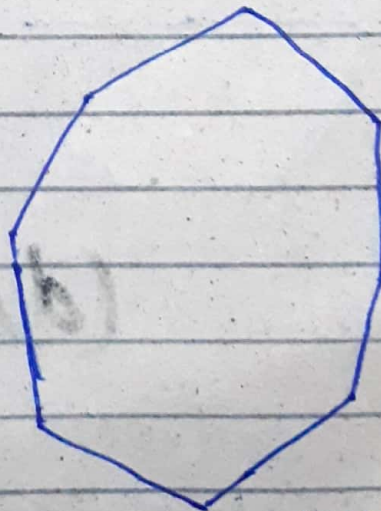
Fierce , Pomegranate

PUMPKIN

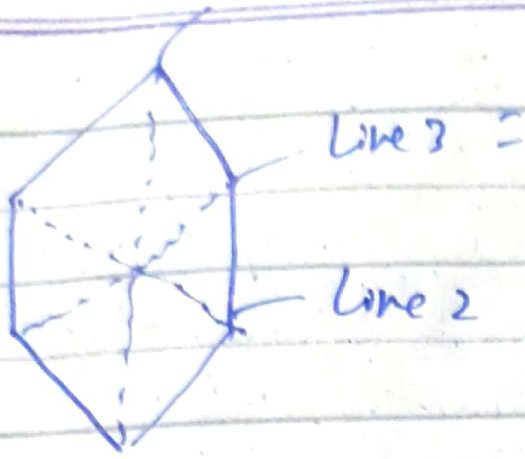
(c)



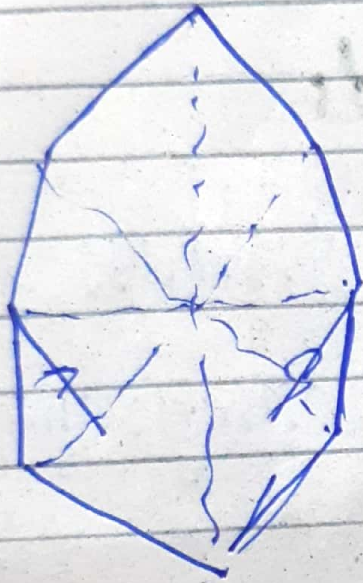
Hexagon
↓



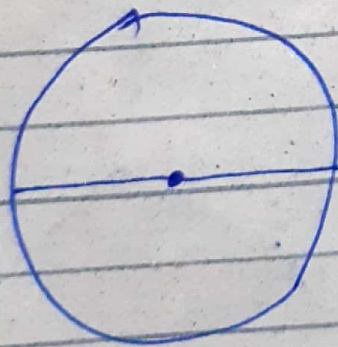
Octagon



Hence 3 lines
of symmetry
in regular hexagon



∴ 4 lines of
symmetry in
regular octagon.



1 line of
symmetry.

(d)

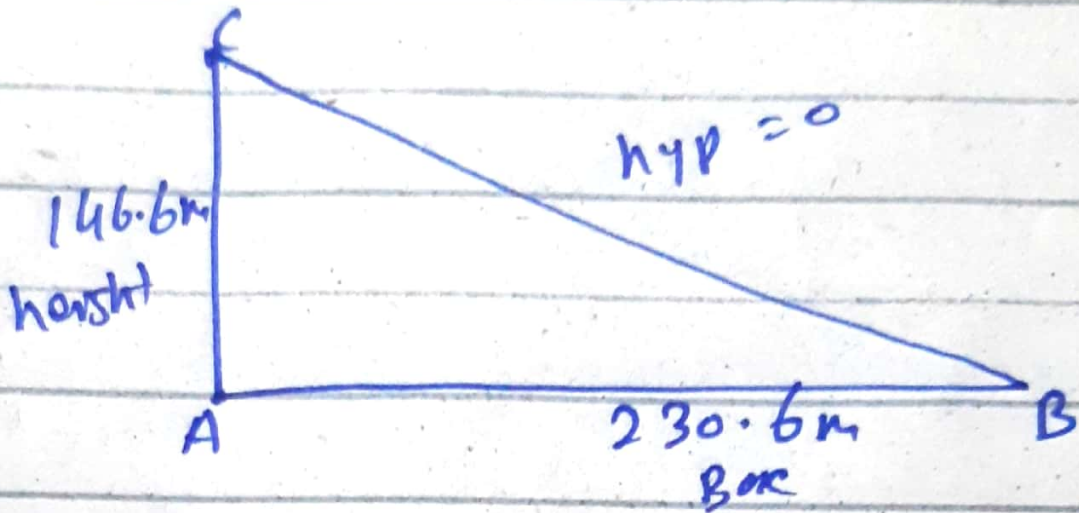
Data =

Height of Egyptian pyramid = 146.6m

Base length = 230.6m

Volume = ?

Solution =



Diagonal
~~volume~~ of pyramid =

$$\text{HYP} = \sqrt{\text{Base}^2 + (\text{Perp})^2}$$

$$\text{HYP} = \sqrt{230.6 + 146.6m}$$

$$\text{HYP} =$$