

General Science and Ability

Part II
Section (I)

Q2:

(b) Distinguish composting, incineration, and pyrolysis in solid waste management.

Ans: Solid waste management is the process of collecting, treating and disposing of solid material that is discarded. Wastes are collected from different sources. Waste management needs proper techniques keeping in mind the environmental situations. For instance, there are various methods and techniques by which the waste is disposed of. Some of them are composting, incineration and pyrolysis etc. Furthermore, these methods are much useful in disposing of the waste without causing any harm to the environment. However, these methods are not same and there are some differences among them.

Composting: This process is the converting of organic waste into fertilizers. As a result, it is helpful in more.

~~Composting~~ growth in plants. Consequently, the environment would get rid of wastes and gain beautiful environment of plants.

Incineration: This process is the burning of hazardous materials at high temperature. This type of process is actually different from composting. Through this process contaminants would be destroyed.

Pyrolysis: This type of process represents a process of thermal degradation of the waste in the total absence of air that produces recyclable products, including char, oil/wax and combustible gases.

Although, solid waste is harmful for the society and spread various types of disease. This type of waste requires dire need of social attention.

Q2.

(c)

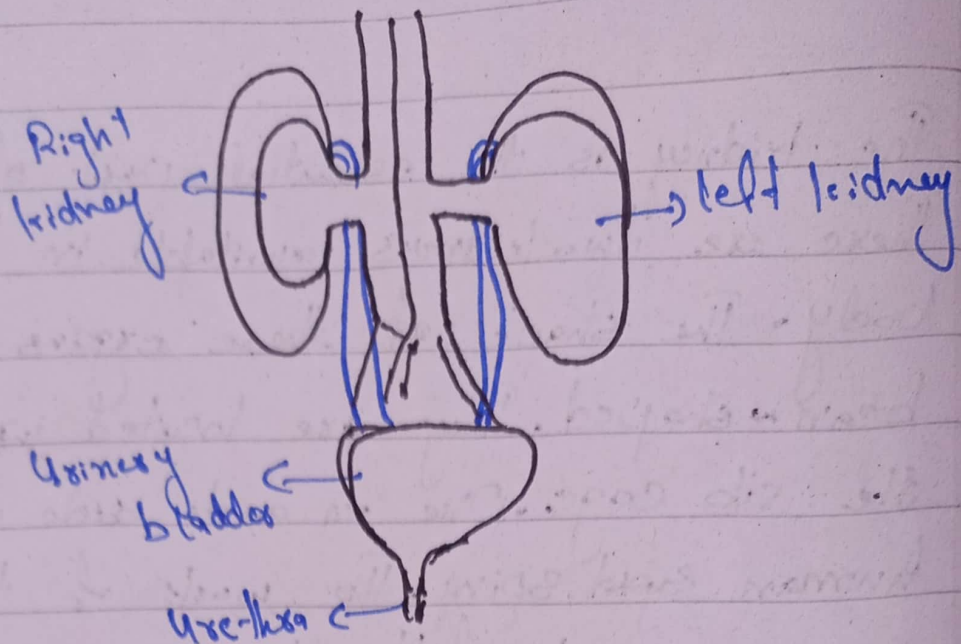
Ans: The kidney is the essential part of body. There are two kidneys available in human body. The shape of these organs are bean-shaped. They are located just below the rib cage. One on each side of human spinal spine. The work of these organs are to filter the waste material in liquid form. Healthy kidneys filter about a half cup of blood every minute, removing wastes and extra water to make urine.

Process in Urine Formation:

The kidneys filter unwanted substances from the blood and produce urine to excrete them. The kidney regulates the water and salt content and removes urea.

The urine is transported to the bladder along tubes called ureters. The bladder stores the urine until it is convenient to expel it from the body through the urethra.

(3)



Q 3:

(9)

Ans: A system of winds rotating inwards to an area of low barometric pressure, with an anticlockwise circulation ~~is~~ is called cyclone. A cyclone is a large air mass that rotates around a strong center of low atmospheric pressure, counterclockwise in the northern Hemisphere ~~and clockwise in the southern Hemisphere~~ and clockwise in the southern Hemisphere. There are various types of ~~cyclones~~ cyclone. ~~But~~ However, some are destructive.

Tropical cyclone: These type of cyclone is also known as typhoons or hurricanes.

This type of cyclone is the most

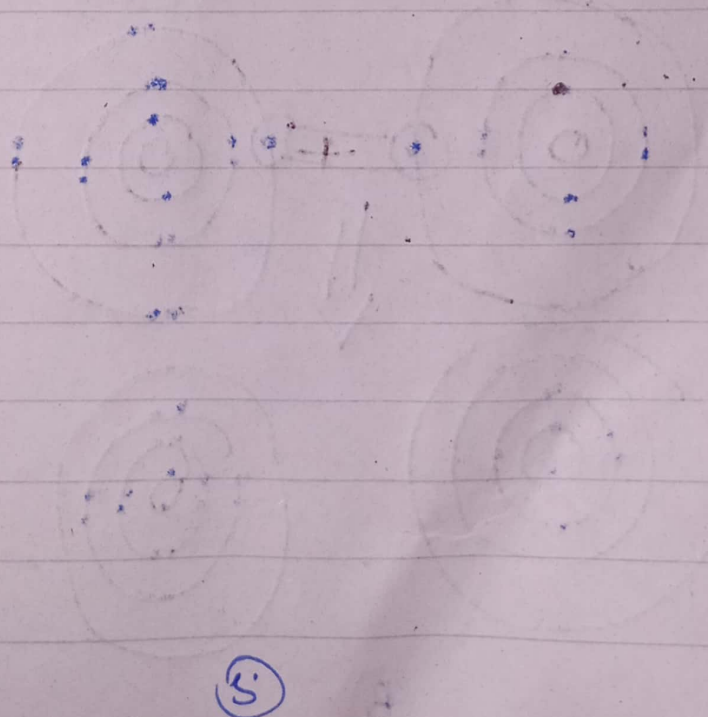
(4)

destructive weather phenomena. They are intense circular storms that originate over warm oceans, and have maximum wind speed approximately 119 kilometres per hour and heavy rains.

Ex. Bipaşoj is the best example of this type.

Extratropical cyclone: This type of cyclone is also considered as the most destructive one. Extratropical cyclones have cold air at their centres, and derive their energy from release of potential energy when cold and warm air masses interact.

These types of cyclones often occur over land or ocean.



Q3: (d)

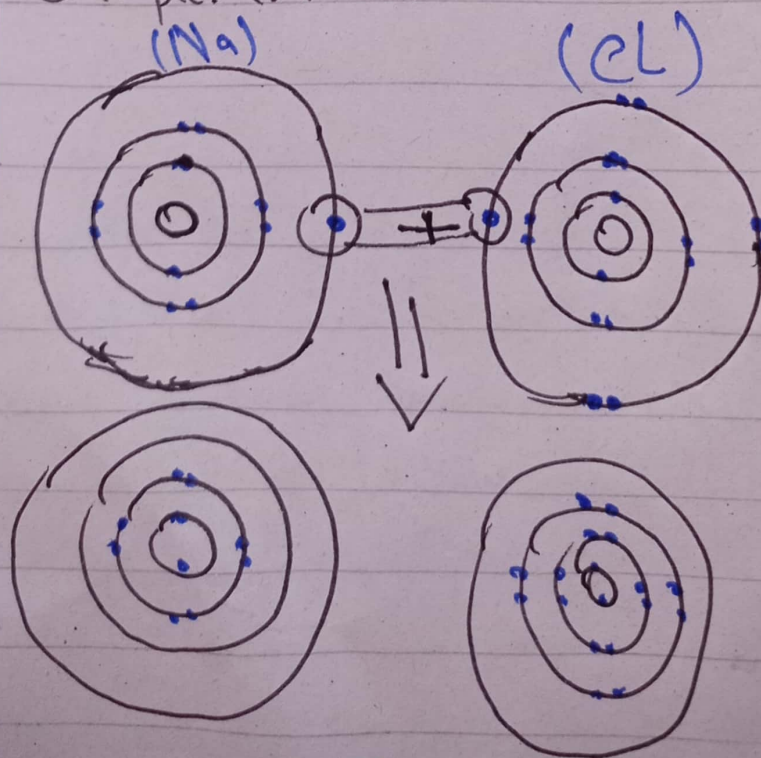
Ans: There are mainly two forms of bonding that an atom can participate in.

Covalent bonding involves the sharing of electrons between two or more atoms. Ionic bonds form when two or more ions come together and are held together by charge differences.

Ionic bond: This is electrovalent bond, in this type strong attraction of charged ions make another chemical compound.

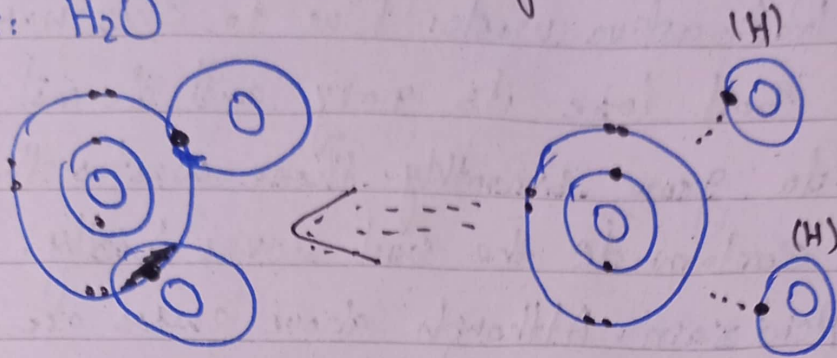
Ionic bond occurs between metals, losing electrons, and nonmetals, gaining electrons.

Example: (NaCl)



Covalent bond: A covalent bond is formed by the equal sharing of electrons from both participating atoms.

Ex: H_2O



Q4:

(19)

Ans: Land pollution is also known as soil contamination, soil pollution or land degradation. This is the major issue in the world and caused by the presence of xenobiotic chemical or other alteration in the natural soil environment. It is mainly caused by industrial activity, agricultural chemicals or improper disposal of waste. These are some factors which lead to the exploitation within the soil.

Deforestation: Deforestation is the cut down of trees and clear land for farming, construction and settlement purposes. Due to this

(7)

problem, forest fires, soil loss ~~the~~ its
vegetation cover. The erosion process
is thus accelerated:

Radioactive waste: Due to this waste,
soil lose its glory and do not able
to grow smoothly. These wastes thus
contaminate the soil cover badly.

Acid rain: Although above causes are
anthropogenic cause but this is also
indirectly man-made cause. This rain
is generated because of climate
change and man human activity is
the main exponent of climate change.
This type of cause is also contaminate
the soil cover.

Section-(2)

Q6

(a) Identify the series:

i) 10, 100, 200, 300, 400, ...

ii) 3, 7, 23, 95, 479, ...

(c) Nisha is 15 years elder to Romi. If 5 years ago, Nisha was 3 times as old as Romi, then find the Nisha's present age.

Sol:

Data: present

past

$$\text{Romi} = n$$

$$n - 5$$

$$\text{Nisha} = n + 15$$

$$n + 15 - 5 = n + 10$$

Equation:

$$n + 10 = 3(n - 5)$$

$$n + 10 = 3n - 15$$

$$3n - n = 15 + 10$$

$$2n = 25$$

$$n = \frac{25}{2} = 12.5$$

So present age of Nisha is $12.5 + 15 = 27.5$ years

Q6:

(d) 210 oranges, 252 apples and 294 pears equally packed in cartons so that no fruit is left. What is the biggest possible number of cartons needed?

Ans:

Sol:

Data: Total number of oranges = 210

Total number of apples = 252

Total number of pears = 294

Finding the common factors

$$210 = 2 \times 3 \times 5 \times 7$$

$$252 = 2 \times 2 \times 3 \times 3 \times 7$$

$$294 = 2 \times 3 \times 7 \times 7$$

$$\text{Common factors} = 2 \times 3 \times 7 = \underline{42}$$

Biggest possible number of cartons needed to pack the fruit is 42.

Q7:

(b) In a certain code BROTHUR is written as QDGSNQA. What will be code for SISTER?

Ans:

B → A

S → R

R → Q

T → H

O → N

S → R

T → S

T → S

H → G

E → D

E → D

R → Q

R → Q

(10)

So, BROTHER = Q D G S N Q A
SISTER = Q D S R H R.

Q7:

(19) During a sale, a clerk was putting a new price tag on each item. On one shirt, he accidentally raised the price by 20% instead of lowering it by 20%. As a result the ~~result~~ price on the tag was Rs 80 too high. What was the original price?

Ans Sol:

Data = price of shirt after increase = 80 Rs
20% increased.

= Equation:

$$\% = \frac{\text{actual change}}{\text{original price}}$$

let x is the original price.

$$20\% = \frac{80}{x}$$

$$\frac{20}{100} = \frac{80}{x}$$

$$20x = 8000$$

$$x = \frac{8000}{20}$$

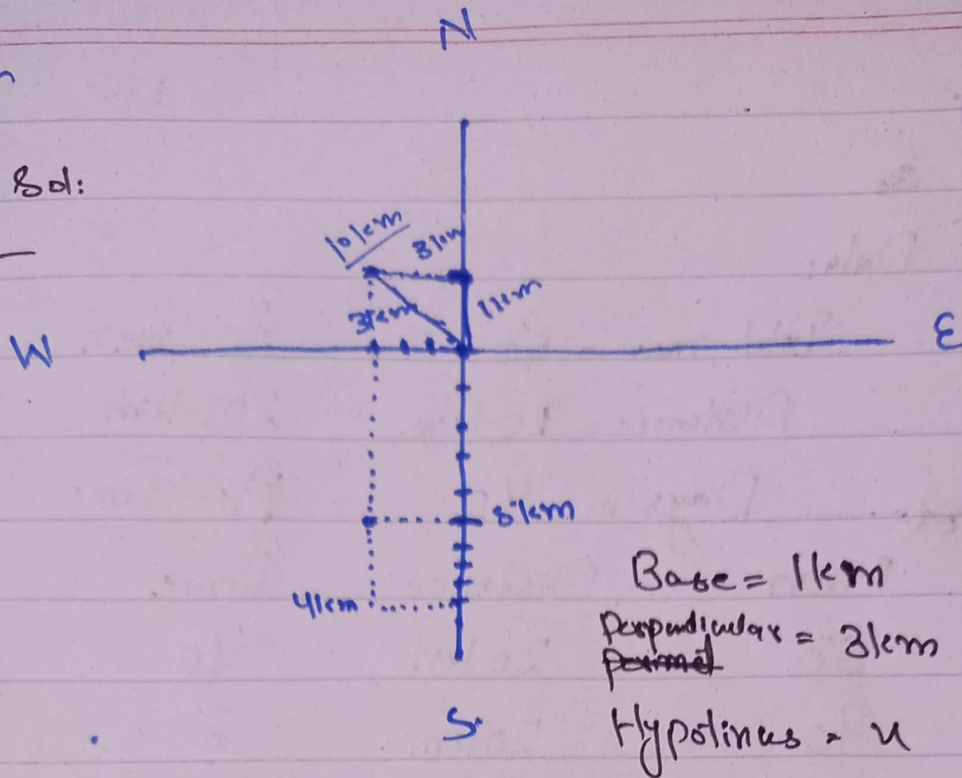
$$x = 400$$

(11)

28:

(9) Sol:

Ans:



Pythagoras theorem:

$$(\text{Hyp})^2 = (B)^2 + (P)^2$$

$$u^2 = (1)^2 + (3)^2$$

$$u^2 = 1 + 9$$

$$\sqrt{u^2} = \sqrt{10}$$

$$u = 3.16 \text{ km}$$

Man is 3.16 km away from his starting point.

Q. 8:

(c)

Ans: Data:

Total men = 50

70 men

Distance = 20 km

20 km

Days = 40

Time

Sol:

Men

Distance

Time

50

20 km

40

70

20 km

?

$$= \frac{n}{40} = \frac{20}{20} \times \frac{50}{70}$$

$$\frac{n}{40} = \frac{50}{70}$$

$$n = \frac{40 \times 50}{70} = \frac{200}{7} = \boxed{28.57 \text{ days}}$$

So, if 70 men can construct the road
it will take ~~28 days~~ 28.57 days.