M T W T F S DATE:

PART- II

SECTION- II

V good for math work
Good for theory but
Keep length equal for all parts

Q # 6

(a) Data:

Three candidates contested election

let candidate 1 = x
candidate 2 = y
candidate 3 = z

voter received by each candidate

candidate 1 = x = 15000
candidate 2 = y = 10000
candidate 3 = z = 8000

which one got the highest % of vote

Total voter = x + y + z =
= 15000 + 10000 + 8000

Total voter = 33000 voter

voter % received by x = $\frac{15000}{33000} \times 100$

voter % received by x = $\frac{500}{11}$

voter % received by x = 45.45 %

voter % received by y = $\frac{10000}{33000} \times 100$

voter % received by y = $\frac{1000}{33} = 30.30\%$

(2).

M T W T F S DATE:

voter % received by y = 30.30%

voter % received by z = $\frac{8000}{33000} \times 100$

voter % received by z = $\frac{800}{33} = 24.24$

voter % received by z = 24.24%

The highest % is for candidate x

x = 45.45% ← wining candidate

b)

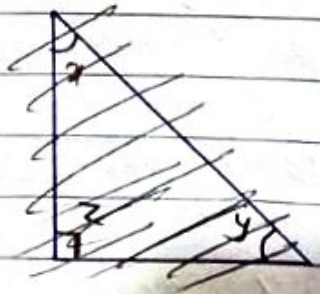
Data:

ratios of angle of a triangle = 3 : 4 : 5

sum of ratios = 3 + 4 + 5 = 12

find the angles

let the angles x, y & z



∵ we know that the sum of angle of triangle = 180°

x + y + z = 180°

M T W T F S DATE:

Now,

$$x = \frac{\text{ratio of } x}{\text{sum of ratio}} \times \text{sum of angle}$$

$$x = \frac{\cancel{3}^{1} \times \cancel{180}^{45}}{\cancel{12}_{4}}$$

$$\boxed{x = 45^\circ}$$

Now,

$$y = \frac{\text{sum of angle}}{\text{sum of ratio}} \times \text{ratio of } y$$

$$y = \frac{\cancel{180}^{60}}{\cancel{12}_{3}} \times \cancel{4}_{1} = 60^\circ$$

$$\boxed{y = 60^\circ}$$

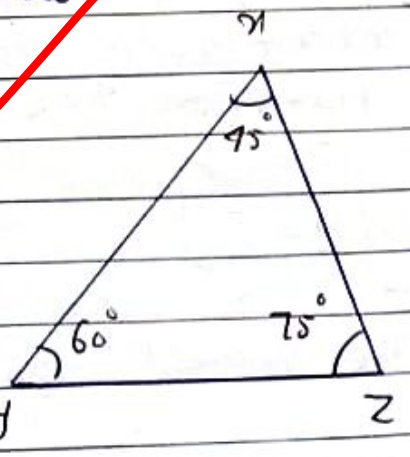
Now,

$$z = \frac{\text{sum of angle}}{\text{sum of ratio}} \times \text{ratio of } z$$

$$z = \frac{\cancel{180}^{15}}{\cancel{12}_{1}} \times \cancel{5}^{5}$$

$$z = 15 \times 5$$

$$\boxed{z = 75^\circ}$$



$x = 45^\circ$
$y = 60^\circ$
$z = 75^\circ$
} three angles of triangle

(1)

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d) Data:

Ratio of present ages of A & B = 6 : 7

after 5 years of age the ratio would be 7 : 8

present ages of A & B = ?

let a common multiple between the two ages = x

Therefore, the present age

6x & 7x

the age after 5 years

$$\frac{6x+5}{7x+5} = \frac{7}{8}$$

finding the x now

$$8(6x+5) = 7(7x+5)$$

$$48x + 40 = 49x + 35$$

$$40 - 35 = 49x - 48x$$

$$5 = x$$

$$\boxed{x = 5}$$

Now,

the present age of A = 6x

A = 6 X 5 = 30

Present age of A = 30 years

M T W T F S DATE:

the present age of B = 7x
B = 7x 5
B = 35

the present age of A = 30 years
the present age of B = 35 years

Q- Data
Group of boys and girls are to be formed

Number of boys in a group = 4
Number of girls in a group = 6

Total girls for grouping = 102

Total number of boys for grouping = ?

First find the number of groups formed by girls

Total number of groups = $\frac{\text{total girls}}{\text{girls in one group}}$

Total number of groups = $\frac{^{17}\cancel{102}^{\cancel{4}}}{\cancel{6}_{1}} = 17$

total groups = 17

M T W T F S DATE:

Now,

boys required for 17 groups = total groups × boys in one group

boys required for 17 groups = 17 × 4

boys required for 17 groups = 68

Q 8

a) Data:

sum of three consecutive odd number = 273

find the odd number.

let the odd number, = x

Now the consecutive odd number 2 = x + 2

consecutive odd number 3 = x + 4

Now, the three consecutive odd number are

$x_1 = x$

$x_2 = x + 2$

$x_3 = x + 4$

sum of there number = 273

$x_1 + x_2 + x_3 = 273$

M T W T F S DATE:

$x + x+2 + x+4 = 273$

$3x + 6 = 273$

$3x = 273 - 6$

$3x = 267$

$\boxed{x = 89}$

Now,

$x_1 = x = 89$

$x_2 = x + 2 = 89 + 2 = 91$

$x_3 = x + 4 = 89 + 4 = 93$

The three consecutive odd numbers are

$\boxed{x_1 = 89}$, $\boxed{x_2 = 91}$, $\boxed{x_3 = 93}$

b)

missing number

i) 1, 16, 36, 64, ?, 144

$2^2, 4^2, 6^2, 8^2, 10^2, 12^2$

1, 16, 36, 64, $\boxed{100}$, 144

iii) 1, 7, 15, 25, ?, 51

1, 1+6, 7+8, 15+10, $\boxed{25+12}$, 37+14

1, 7, 15, 25, $\boxed{37}$, 51

(9)

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ii) 30, 29, 27, ?, 20, 15

30, 30-1, 29-2, 27-3, 21-4, 20-5

30, 29, 27, 24, 20, 15

iv) 0, 2, 6, 12, 20, 30, ?

0, 0+2, 2+4, 6+6, 12+8, 20+10, 30+12

0, 2, 6, 12, 20, 30, 42

v) 18, 24, 72, 36, 108, ?

18, $\frac{18}{2}$, 21X3, $\frac{72}{2}$, 36X3, $\frac{108}{2}$

18, 21, 72, 36, 108, 54

Q -

i - SHIRT

ii - ~~RANGED~~ DANGER

iii - STOMACH

iv - LONDON

v - HOLIDAY

M T W T F S DATE:

d - Data.

Ages of three people

Sara's age = x
Sara's mother age = y
Sara's brother age = z

Given that:
$y = 6x$
$z = 2x$
after three years, the sum of the ages will be 72

Ages in the current year

Sara = x
Sara's mother = $y = 6x$
Sara's brother = $z = 2x$

Ages after three years
Sara = $x + 3$
Sara's mother = $y = 6x + 3$
Sara's brother = $z = 2x + 3$

Sum of the ages after 3 years
$x + y + z = 72$
$3 + x + 6x + 3 + 2x + 3 = 72$
$x + 3 + 6x + 3 + 2x + 3 = 72$ → (1)

Solving equation (1)
$9x + 9 = 72$

DATE:

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$9x = 72 - 9$

$9x = 63$

$x = \frac{63}{9}$ 7

$\boxed{x = 7}$

We got the present age of Sara

$\boxed{\text{Sara's age} = x = 7 \text{ years}}$

The age of sara's mother

Sara's mother's age = $6x$

Sara's mother's age = 6×7

$\boxed{\text{Sara's mother's age} = 42}$

Present ages:

$\boxed{\begin{array}{l} \text{Sara} = 7 \text{ years} \\ \text{Sara's mother} = 42 \end{array}}$

NOTES DATE:

SECTION - I

Q # 4 a

1 - METHODS EMPLOYED IN SOLID WASTE MANAGEMENT

The different methods employed in solid waste management are as follows:

i - Engineered way of SWM
- a - Engineered landfill sites
- b - Incineration of solid waste
- c - Composting of solid waste

ii - Local and unsustainable methods of SWM
- a - Open burning
- b - Open dumping on land
- c - Dumping in sea

These methods are discussed in detail below

i - ENGINEERED WAYS OF SWM

a - ENGINEERED LANDFILL SITES:

This is the most sustainable and cost-effective method of

(2)

M T W T F S DATE:

managing municipal solid waste. Landfill sites are a kind of system designed where solid waste is dumped and buried. The waste is prevented from getting in contact with ground water and atmosphere also. Landfill sites are lined at bottom and the waste is buried and covered to protect the atmosphere also.

* There are three landfill sites in Karachi and two in Lahore.

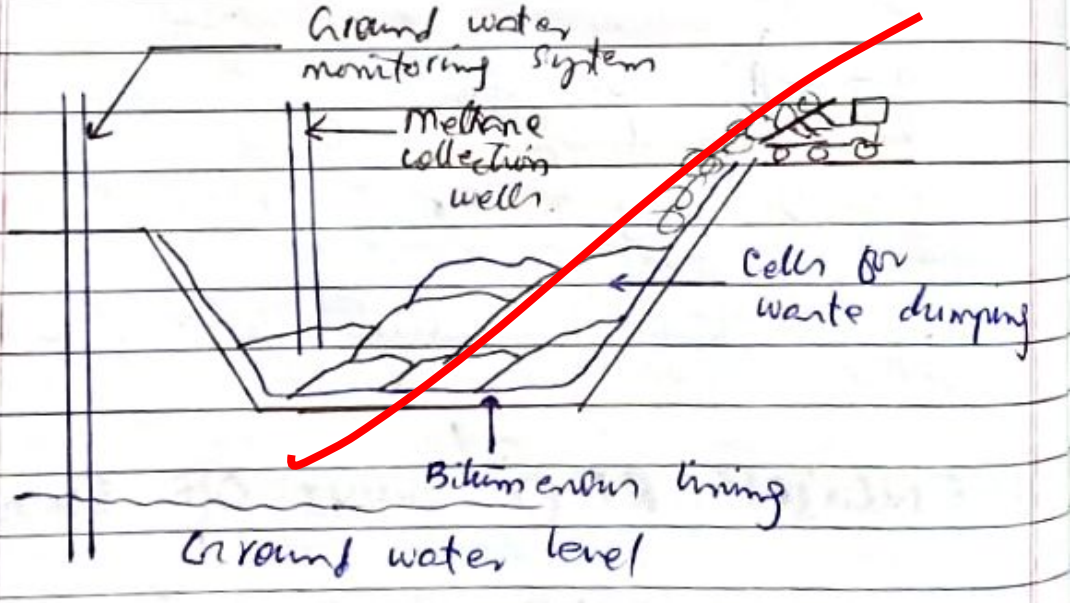

Figure: 1: A typical engineered landfill

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b- INCINERATION:

Another method of managing solid waste is incineration. It is simply the burning of waste in an incinerator. By burning the mass and volume of the waste gets reduced to 90%. It mostly used for hazardous waste like corona and hospital waste which can spread diseases.

+ Agha Khan Karachi has an incinerator plant

c- COMPOSTING:

It is a sustainable method of managing solid waste. It is used mostly for green waste i.e. the waste of vegetables used in kitchen like leaves, twigs and fruits etc. The agricultural waste like waste of crops and coconut husks is also used to manage by making a compost.

It is sustainable and by making composting of waste, it can be used as a fertilizer in the fields and gardens also. In a compost microbes and small worms work to decompose the

M T W T F S DATE:

waste.

There all were the engineered way to manage solid waste.

ii- UNSUSTAINABLE METHODS OF SWM

In underdeveloped countries like Pakistan and India where there are no proper SWM following methods are employed.

a- Open burning:
Waste is burned in open areas polluting the environment Karachi is severely effected by open burning

b- Open dumping:
Waste is dumped in open areas such as streets and plots polluting the land and destroying the aesthetics of a city for example Karachi city

c- Dumping in sea:
In many areas waste is dumped into sea without treatment which pollutes the sea water.

M T W T F S DATE:

There all were the engineered and unengineered maintainable methods of SWM.

b-

i- FUNCTION OF A HUMAN HEART IN BLOOD CIRCULATION

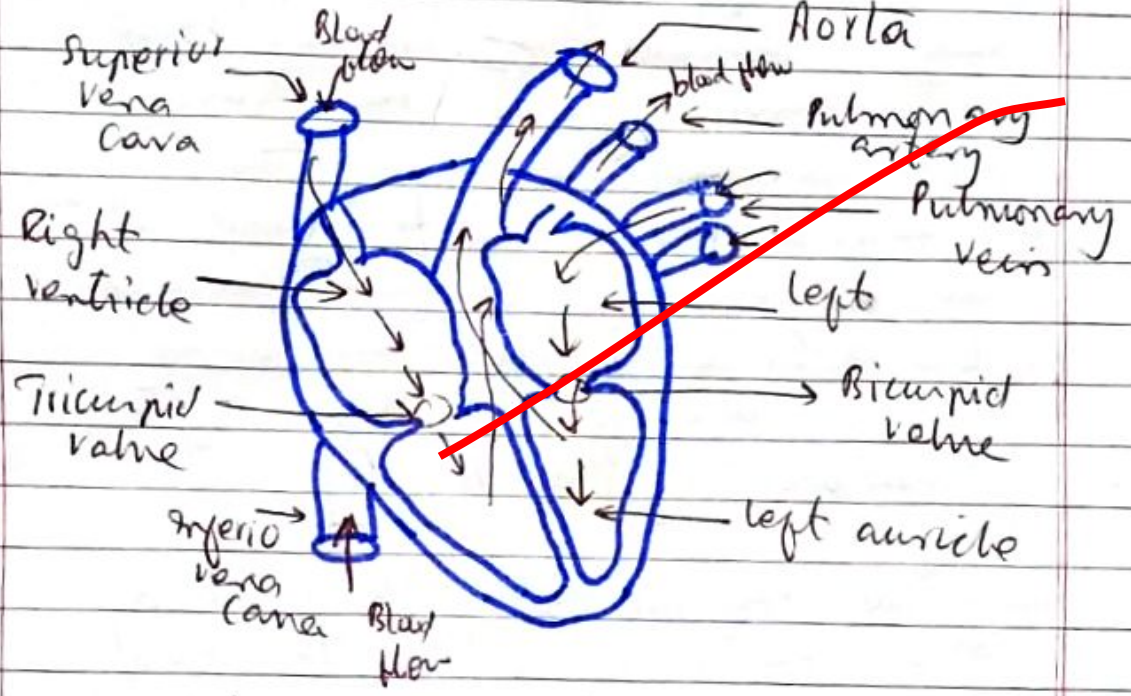

Figure: A human heart showing blood flow.

Heart's function in blood circulation in a body is pumping the heart and making sure that pure blood circulates the heart by working in coordination with lungs and blood vessels which are arteries and veins.

The process of blood circulation is divided into two phases.

i - Pulmonary phase
ii - Systemic phase

a - PULMONARY PHASE:

On the pulmonary phase following step take place.

i - Blood flows into the upper right auricle from inferior vena cava and superior vena cava

ii - When the ventricle gets filled the blood transfers from auricle to ventricle by a tricuspid valve between the two right chambers of the heart

iii - The tricuspid valve shuts when the ventricle gets filled and the ventricle starts sending the blood which needs to be pure in lungs by pulmonary artery to lungs.

iv - When the blood empties the right ventricle the valve shuts and the pulmonary phase gets completed.

Blood circulates to lungs where carbondioxide is removed and blood gets oxygen.

b- SYSTEMIC PHASE:

In the systemic phase, lungs send blood back to heart so that heart pumps the pure blood to the body.

i- Blood is filled in the left auricle / chamber by pulmonary vein

ii- Blood flows from left auricle to left ventricle by a bicuspid valve

iii- The valve shuts when the chamber is filled completely

iv- Now, the aorta sends pure water from heart to the entire body.

This is the main function of the most important organ of the body and it works in two phases.

(17)

M T W T F S DATE:

C -

1 - MYOPIA:

A myopia is a malfunctioning of eye also called short-sightedness in which a person can see near objects clearly but cannot see far objects clearly.

* It happens because the image is formed in front of Retina instead of on Retina. The retina gets shrunk in myopia.

2- HYPEROPIA:

In hyperopia, the person seen the far objects more clearly than the near objects or the retina gets swell and the image is formed behind retina instead of on retina.

It is also called far-sightedness

M T W T F S DATE:

3- THE MAJOR PARTS OF HUMAN EYE

i- Cornea: It is the dome like structure that gives the shape to over eye. It is convex. It is in front of the lens

ii- Sclera: The white part of the eye that one can see in the mirror is sclera

iii- Pupil: It is the dark-colored part of the eye on the lens behind the cornea. It is like a shutter that allows entering of light in the eye.

iv- Lens: It is one of the most important parts of eye. It ~~be~~ is like the camera which helps in image formation in the eye. It is colored and convex in shape

v- Iris: It is the muscle that holds the lens. It is sensitive to light and allows pupil enter the light by relaxing and contracting

M T W T F S DATE:

vi- Retina: It is the layer behind the eye on which the image is formed.

vii- Optical nerves: These are the nerves that help eye send message to the brain and the brain makes sense of what eye see.

viii- Blind spot: It is the spot behind the eye that one can see in the mirror. No light falls here and is called blind spot.

These all were the major parts of a human eye

d. USES OF THE WAVES

i- MICROWAVE:

* These are waves smaller in length than radio waves.

i- Can be used in microwaves for cooking

ii- These can penetrate rain and clouds so can be used in radar signals

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iii- These are used in communication
iv- These are used in remote control of television

ii- ULTRAVIOLET

* These are smaller than visible light

* These are used to kill germs
* These are used in laboratories to sterilize the instruments
* Used in tooth to kill germs
* These are used in tooth for spy to find fingerprints

iii- X-RAYS:

These are smaller than ultraviolet

* The major use of X-rays is taking the picture of bones because they are small and can penetrate muscles and flesh
* They can also be used to transmit energy

M T W T F S DATE:

Q 5

a. METHODS OF FOOD PRESERVATION

There are many methods of food preservation.

i- HEATING:

The most widely used method is heating at more than 100°c.

ii- FREEZING:

Freezing at below 0°c is also used to preserve food.

iii- FOOD PRESERVING AGENT:

There are some food preserving agents like salt and sugar syrup that can be used to preserve food.

iv- DRYING:

All the moisture is removed so that the bacteria do not find conducive environment. In the ancient times, people used to dry meat

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v- PACKING:

Packing can also be used to preserve food. Canning of food in jars & tins is a way to preserve food for long time without worrying about temperature and moisture content.

These all are the methods used for food preservation.

b-

1- MILKY WAY:

Milkyway is the disk-shaped Galaxy. It has four major arms ~~in~~ from which Orion arm is the one in which our solar system exists.

2- DARK MATTER IN GALAXY:

Dark matter is found in the centre of galaxy which is also called black hole. The stars which die get pulled by the hole and gets buried there. It is the grave yard of dead stars.

M T W T F S DATE:

2- DIFFERENT PARTS OF GALAXIES:

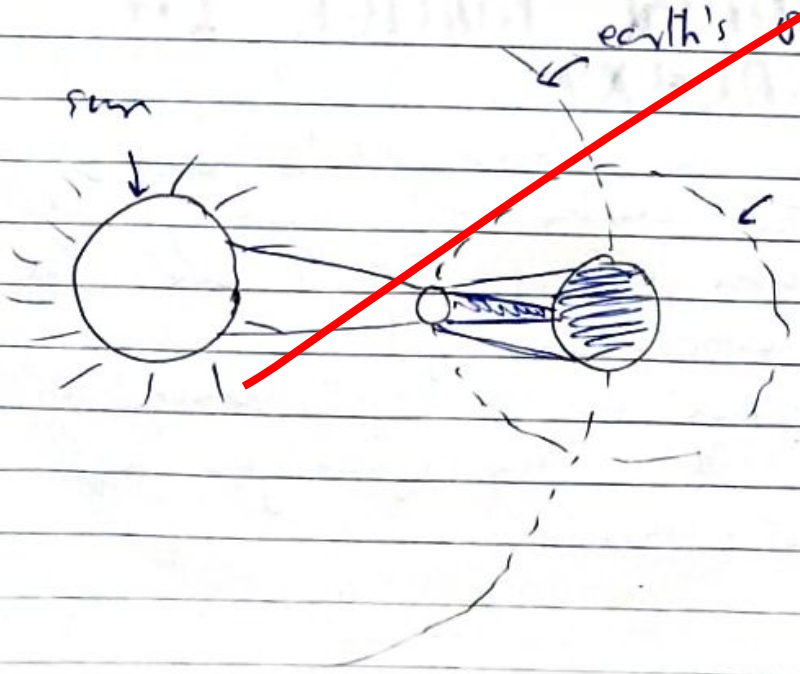
Galaxies have four different parts

i- Centre of the galaxy
ii- The area where star exist
iii- Arm of the galaxy which spiral around the galaxy
iv- The outer atmosphere of the galaxy.

C- SOLAR AND LUNAR ECLIPSE

i- SOLAR ECLIPSE:

In solar eclips the earth gets in the shade of moon and does not get lit by the sun.



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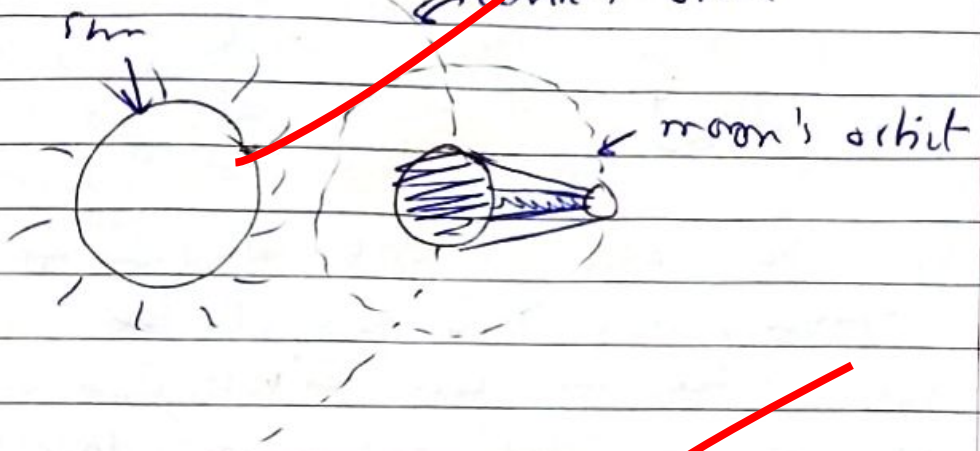
ii-b- LUNAR ECLIPSE:

An lunar eclipse earth comes between moon and sun. And the moon does not get light of sun.



d- NUCLEAR FISSION:

It is breaking of isotopes in which energy is released.

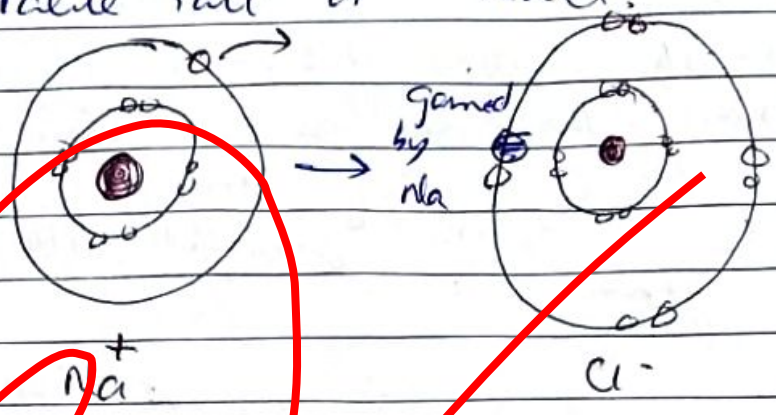
NUCLEAR FUSION:

It is joining of isotopes in which energy is absorbed by them.

M T W T F S DATE:

IONIC BOND IN TABLE SALT:

Table salt is NaCl.



In Na there is one electron in its valance shell. To complete the octet the Na loses its electron and Cl receives the electron. This complete transfer of electron develops an electrostatic force between them that is the strongest force. The atom remains close therefore.

The complete transfer is known as ionic bond.