

Name:- Snabil Ali

Batch :- 157

Paper:-

General Science and Ability

(SUBJECTIVE)

Section - I

Q#2 (a)

Star

i) A star is a ball of hot gases that produces light and heat through nuclear reaction.

ii) Star does not revolve around the planets

iii) Stars are more massive in structure as compared to planets.

iv) Example of stars includes - Sun.

v) Stars cannot support the life of living organisms due to high temperature

Planet

i) A planet is a body that does not produce its own light and heat, they only reflect it from their surface.

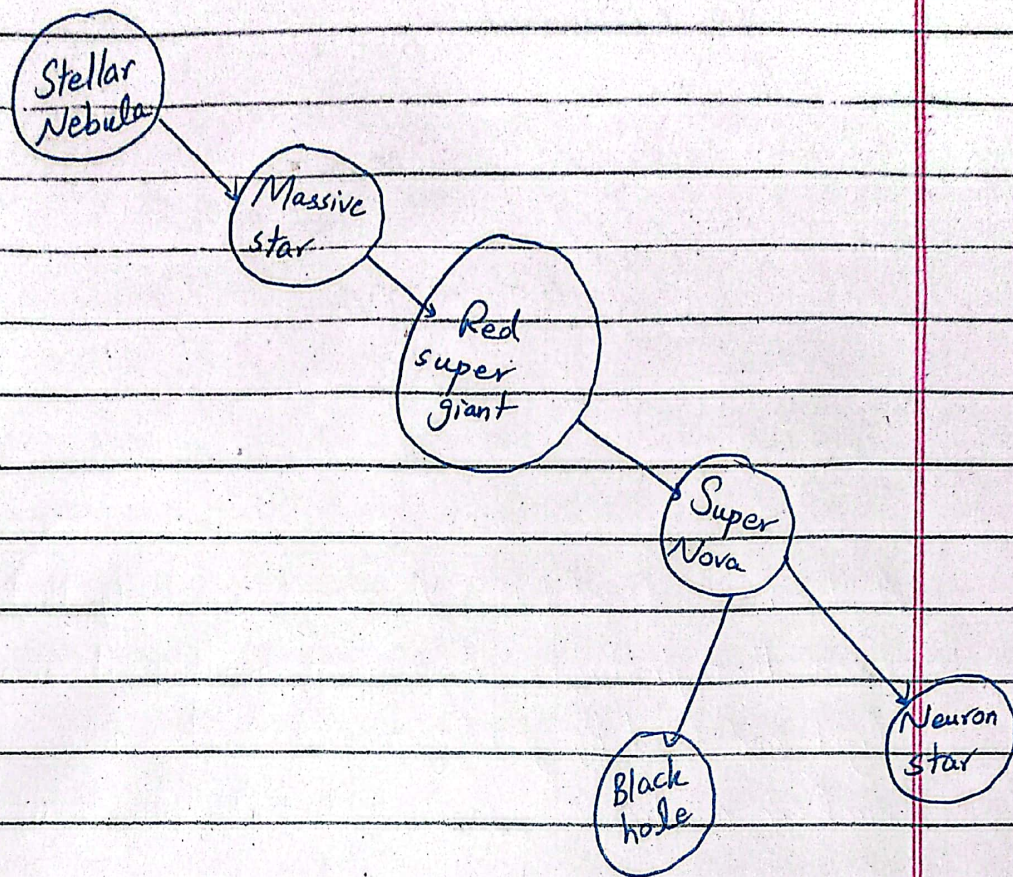
ii) Planets revolve around the stars like Earth revolves around Sun.

iii) Planets are not that much massive as compared to stars.

iv) Example of planets includes - Earth.

v) Planets can support the life of living organisms due to their cool surface

Life cycle of a star



Explanation

The life cycle of a star starts from stellar nebula and then it reacts to become a massive star and it increases upto Red super giant then a reaction occurs when it is reduced to super Nova that produces a black hole and a Neuron star.

Q#2 (b)

Semiconductors:-

"Semiconductors are the materials whose electrical conductivity lies between

conductors and insulators."

Types-

There are two types of semi-conductors.

i) n-type conductors

ii) p-type conductors

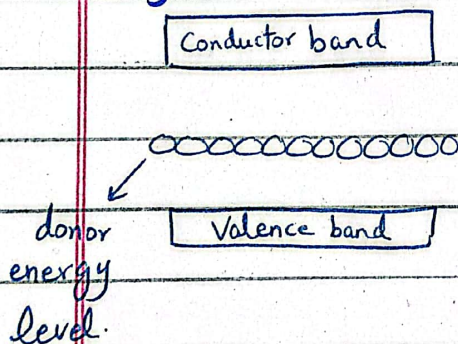
n-type

i) n-type conductors are made when they are added with extra electrons.

ii) They contain negative charge.

iii) e.g. the addition of phosphorus

Diagram:-



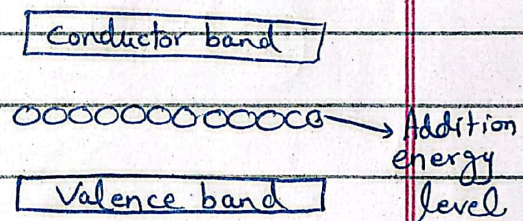
p-type

i) p-type conductors are made when they are added with lesser electrons.

ii) They contain positive holes.

iii) e.g. the addition of boron.

Diagram:-



Modern applications:-

i) Semiconductors are used as diodes in many electrical circuits.

ii) Their conductivity can also be changed by adding impurity therefore they are also used in electrical cables, wires etc.

Q# 2 (c).

Global Warming:-

"Global Warming is defined as the gradual increase in the average temperature of Earth's surface due to human activities."

Mechanism of Greenhouse Effect.

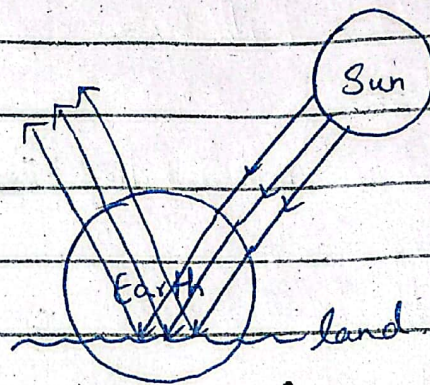


Fig - Normal cases

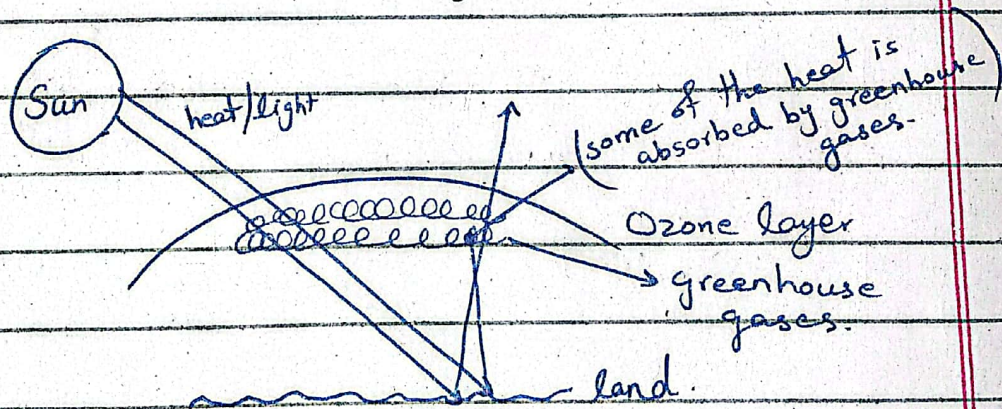


Fig:- Greenhouse Effect.

→ In greenhouse effect, the burning of fossil fuels and many other human activities causes the emission of carbon dioxide and other greenhouse gases that becomes accumulated in the atmosphere.

→ When heat energy from the Sun reaches the Earth, the surface reflects the extra heat back into the space but the greenhouse gases absorb most of the reflected heat and causes the increase in temperature.

→ This mechanism resembles the functioning of a greenhouse. Therefore, it is called greenhouse effect.

Major Greenhouse gases

The three major greenhouse gases include:

- i) Carbon dioxide (CO_2)
- ii) Methane (CH_4)
- iii) Nitrous oxide (N_2O)

According to UNFCCC:-

"The average world temperature has risen more than 1.5°C ."

Q#2 (d)

Tsunami:-

"Tsunami is defined as the strong oceanic waves that occurs due to some unusual activity inside the water."

Natural processes:-

The natural processes that triggers a tsunami are as follows:-

i) Firstly, it can occur due to an earthquake inside the water. This natural process is one of the common cause of generating a tsunami.

ii) It can also be triggered by volcanic eruptions in the water.

iii) Another reason could be the residue of land sliding going into the water can also trigger a tsunami.

Potential Impacts

There can be alot of potential impacts of tsunami on coastal areas that are as follows:-

- Tsunami can cause long-term displacement of people living in coastal areas.
- Tsunami induces floods that causes a huge damage to infrastructures, buildings, households etc.
- Tsunami also causes salinization on the coastal areas and also increases saline in drinking water.

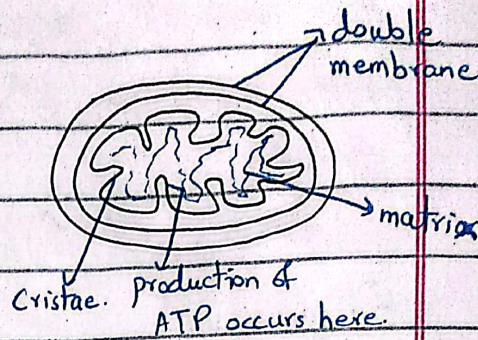
Q#3 (a)

Mitochondria:-

"Mitochondria is the double membraned

organelle in a cell that mainly functions for cellular respiration."

Fig.: Mitochondria.



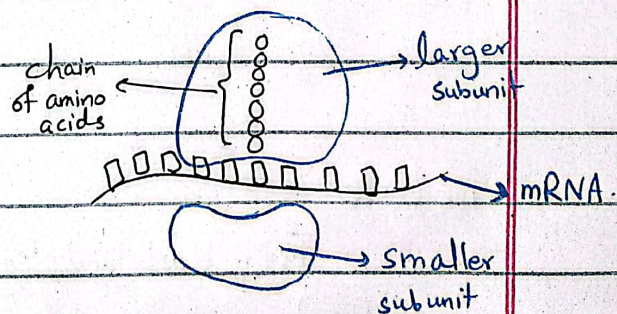
Function:-

The main function of mitochondria is to produce ATP that is the main energy factor of the cell. ATP is produced by breaking down glucose entering mitochondria, therefore it is called the powerhouse of the cell.

Ribosome:-

"Ribosome is defined as a cell organelle that produces chain of amino acids."

Fig.: Ribosome



The structure of ribosome includes larger and smaller subunits with a thread of

message going in between that contains the instructions of producing amino acids. The main function of ribosome is to produce chain of amino acids.

Q#3 (b).

Enzymes:-

"Enzymes are defined as biological catalysts that are used to speed up any chemical reaction."

Lock and Key Model

Lock and Key model was proposed to give an idea about the relationship between the working of an enzyme and a substrate.

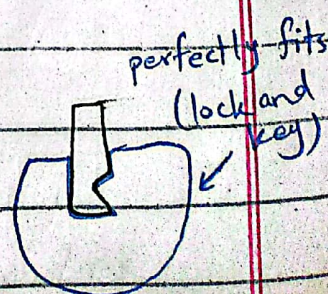
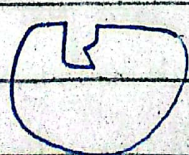
According to this model,

An enzyme is a lock having a specific shape at its point of connection and the substrate is like a key whose shape perfectly fits with that enzyme. It means that every enzyme has a specific substrate.

Fig. Lock and Key Model.

Enzyme (lock)

Substrate (key)



Factors Affecting

The two factors affecting the enzyme activity includes -

i) Temperature

ii) pH level (it can also include the substrate concentration).

Q#3 (c)

Renewable

i) Renewable resources are those resources that can be renewed and are sustainable.

ii) They are pollution-free resources.

iii) They are expensive in use and have low production reliability because they depend upon weather patterns.

iv) They can be renewed directly from the environment.

v) Example includes :- solar, wind, water energy etc.

Non-renewable

i) Non-renewable resources are those resources that cannot be renewed readily and are non-sustainable.

ii) Their consumption increases the amount of hydrocarbons that causes global warming.

iii) They are cheaper in use and have high production reliability.

iv) They cannot be renewed readily and takes million of years.

v) Example includes burning of fossil fuels, oil, gas etc.

Wind Energy:-

→ Wind energy can be seen as a potential and sustainable source for the future as it includes clean and pollution free energy production.

→ Wind energy transforms the kinetic energy of the wind into electrical energy

→ Many countries like Germany and Norway produces alot of energy through wind.

Pakistan's Thimilpur Wind Corridor can also be seen as a sustainable electricity generating source in the future.

Q#3 (d)

Dengue Fever:-

"Dengue fever is a kind of disease that is caused by the mosquito bite named Aedes mosquito."

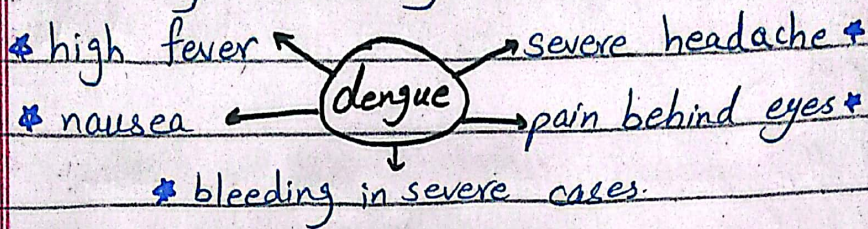
Vector:-

The vector responsible for its transmission is Aedes mosquito (day-biting mosquito) that bites the body of a person and transmits this disease.

Common Symptoms.

The main common symptoms usually come into view after 3-4 days of its biting

and they are mainly :-



Preventive Measures

The key preventive measures includes :-

- do not let the water ^(accumulate) still for many days because it's the main breeding place of mosquitoes.
- use mosquito repellents and mosquito nets for open areas.
- do not let the garbage accumulate in your streets and keep them clean

(Section - II)

Q#8 (a).

If ROAD is coded as UQDG then,

LAKE will be coded as 'OCNH'

Reason:-

In the above code, the first letter numbering starts from D and the position of the letter in correct numbering is then

compared with the numbering that we have ~~store~~ created i.e 1st number starts from D.

⇒ But the second letter is one number less from the compared number, therefore we did the same in the formation of code word for LAKE.

R O A D ⇒ U Q D G
18 15-1 1 4 18 15-1 1 4

Starting the numbering from D.

A B C D E
24 25 26 1 2

F G H I J
3 4 5 6 7

K L M N O
8 9 10 11 12

P Q R S T
13 14 15 16 17

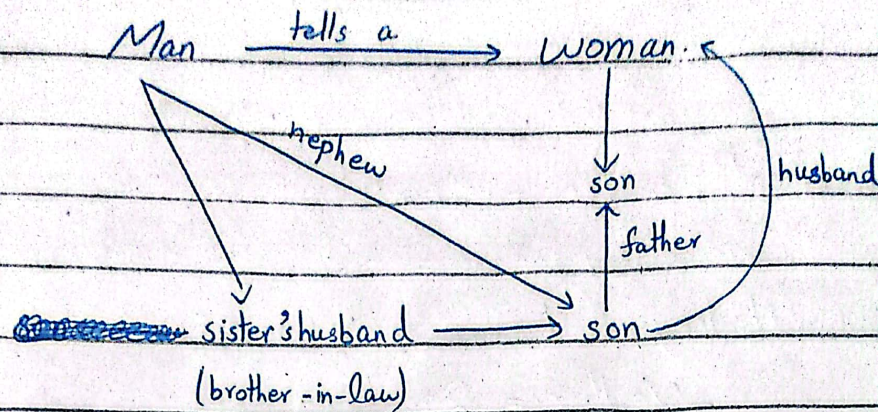
U V W X Y
18 19 20 21 22

Z
23

L A K E ⇒ O C N H
12 1 11 5 12 26 11 5
(-3)
= 26

Hence, proved

Q#8 (b).



Result:- The woman is "daughter-in-law" of that man.

Because the woman is the wife of this man's nephew.

Q#8 (c)

i) 4, 12, 6, 18, 9, 27, 13

ii) 1, 2, 6, 24, 120, 720

Q#8 (d)

Answer:-

1) The third tallest among the friends is 'Q'

2) The maximum possible range of their heights is '66 cm'

Q# 7 (a)

Total people = 100.

Cricket watchers = 65

Hockey watchers = 40

Neither = 20

Answer.

The people that watch both cricket and hockey are '25 people'

Q# 7 (b)

length = 4 + width.

parameter = 72 meters.

$V = ?$

depth = 2.5 meters.

Answer.

$$\text{Parameter} = 2(l + w)$$

$$72 = 2[w + (w + 4)]$$

$$72 = 2(2w + 4)$$

$$72 = 4w + 8$$

$$4w = 72 - 8$$

$$w = \frac{64}{4}$$

$$\boxed{w = 16 \text{ m}}$$

$$\text{length} = 4 + 16 = 20 \text{ m}$$

$$\text{Area} = l \times w = 16 \times 20 \\ = 320 \text{ m}^2$$

$$\text{Volume} = 320 \times 2.5$$

$$\boxed{V = 800 \text{ m}^3} \text{ Ans.}$$

Q# 7 (c)

A Train $\rightarrow$ City A = 8:00 am

speed = 60 km/hr

B Train $\rightarrow$ City B = 8:00 am

speed = 40 km/hr.

distance $A \leftrightarrow B = 400 \text{ km}$

Answer: Rel. Speed = $60 + 40 = 100 \text{ km/hr}$

Time = distance / speed relative

$$t = \frac{400}{100}$$

$$t = 4 \text{ hrs}$$

Time to meet = 8:00 am + 4 hrs

= 12:00 noon.

Q# 7 (d)

$$F + S = 75 \text{ yrs}$$

$$F - 10 = 4(S - 10)$$

$$F - 10 = 4S - 40$$

$$F = 4S - 30$$

$$F + S = 75$$

$$(4S - 30) + S = 75$$

$$5S = 75 + 30$$

$$5S = 105$$

$$S = \frac{105}{5} = 21$$

$$S = 21 \text{ yrs}$$

$$F = 75 - 21$$

$$F = 54 \text{ yrs} \quad \text{Ans.}$$