

Momin Aziz.

General Science and Ability

Mock

Section II

Q. NO: 3

(A)

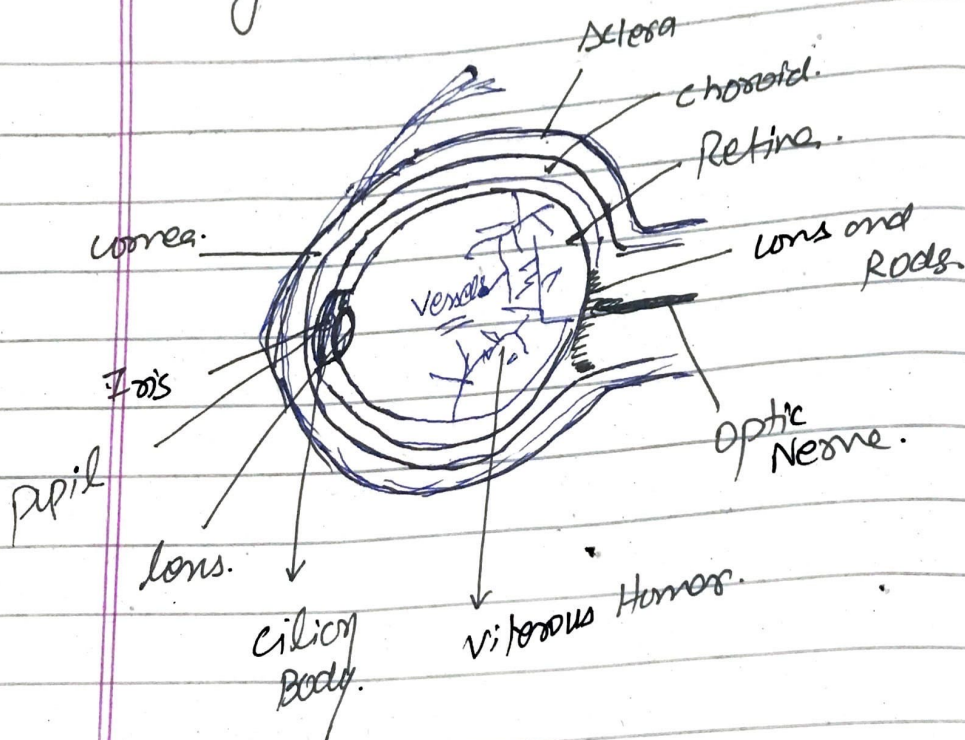
Different parts of eye:

Eye is a important part of human body. It has different parts. Every part ~~work~~ ^{perform} on its function. Through eye we can see the world. Optic nerve of an eye connected with human brain, which receive information and tell us what we saw. It is a Sensory organ that react to light and parts of eye allow human to see things.

These are the main parts of eye

1. Lens
2. Cones, and Rods
3. Optic Nerve

- 8 - Iris
- 5 - Retina
- 6 - Cornea
- 7 - Ciliary body
- 8 - Sclera
- 9 - Choroid
- 10 - Vitreous Body
- 11 - Ligament



Sclera :

Sclera is an outer layer. It is an opaque layer and provides protection.

2- Choroid: After sclera choroid layer
comes. It is a vascular layer
and provides nourishment.

3- Retina:

Retina is a sensitive
layer. Light After passing from lens,
comes into retina. Bundles of
vessels present in retina. It
also contain photoreceptors.

4- Iris:

Iris is the type of muscles
we called it pigmented muscles.
Iris junction is control the
movement of pupil.

5- Cornea:

Cornea is a transparent
layer present in the front of
Iris and pupil to provide the
protection.

6- Lens:

Transparent structure which
involve in the focusing of light
into retina.

7- Cones and Rods:

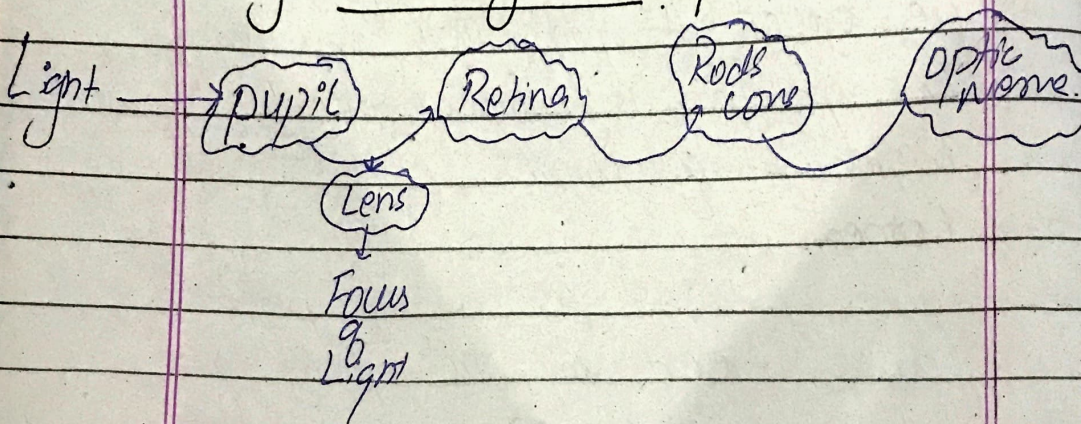
Cones and
rods are photoreceptor cells

Which Convert the Light Nerve into action potential.

Optic Nerve,

Optic Nerve is the type of Nerve which bring impulses from eye to brain.

Light Entering into Eye.



How Far Sightedness and Short Sightedness Can be Corrected.

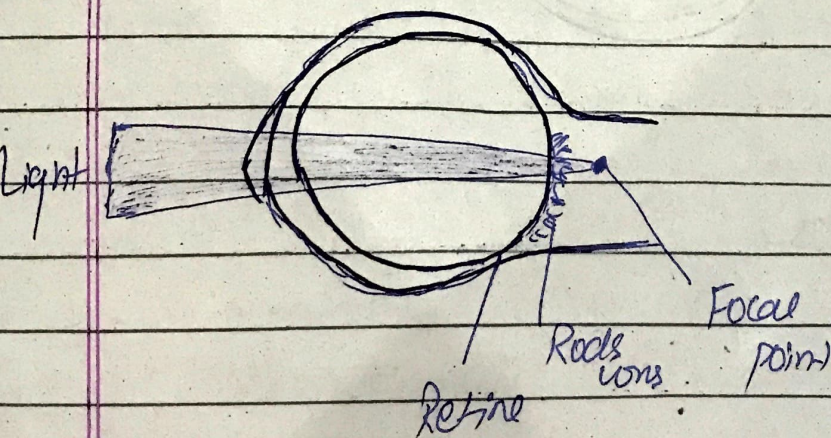
Far Sightedness and Short Sightedness are the disease of human eye. In which

we cannot see the clear images of far and near objects.

Far Sightedness: (Hyperopia).

Far Sightedness occurs due to the Hyperopia.

In hyperopia light cross the retina and focal point not touch the retina. That's why we cannot see the ~~see~~ ~~the~~ images clearly.

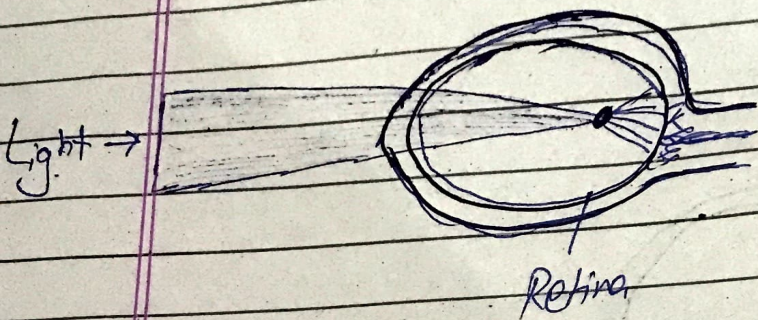


Correction:

By using the convex lens we can see the ^{far} images clearly.

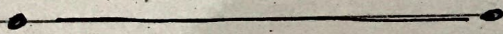
Near Sightedness (Myopia)

Near sightedness occurs due to the Myopia. In Myopia we cannot see the nearby objects clearly. In myopia focal point becomes not on retina but before retina it forms.



Correction:

By using Concave lens we can correct it.



(B)

Kidney Function:

Kidney is the main organ of a human body. Kidney's main function is to filter the blood and formation of urine. Two pair of kidney present in human body. Both performs the same function. Kidney present just below the ^{part of} abdomen.

Kidney functions:

1. Filtration of blood.
2. Reabsorption of nutrients.
3. Secretion of urine.

Nephron:

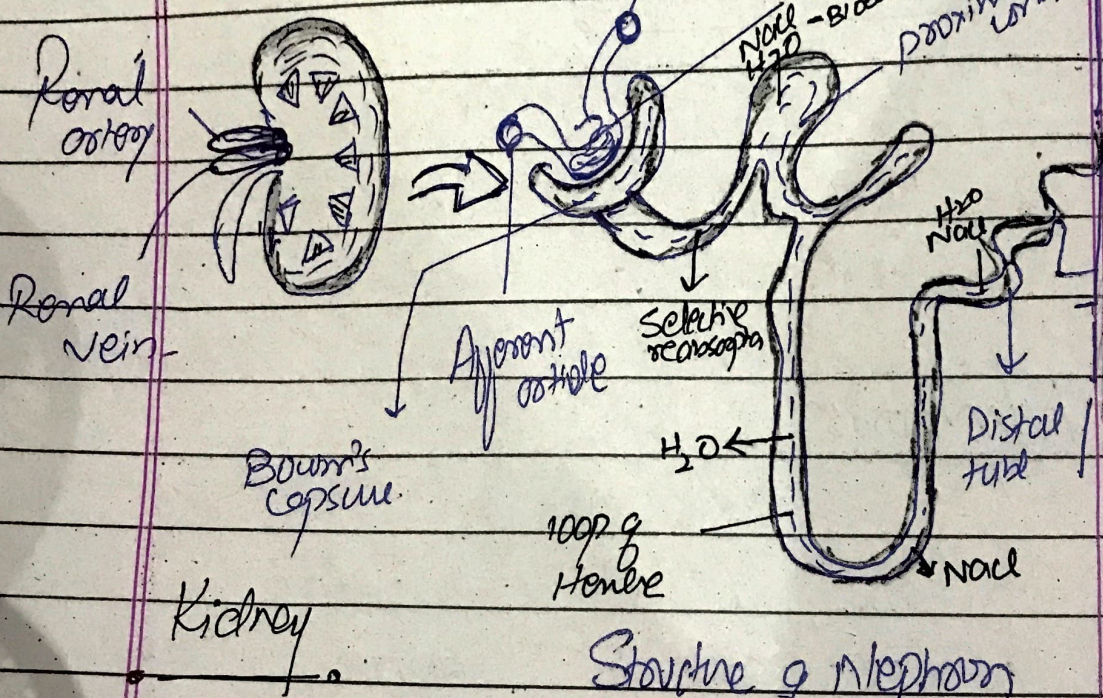
Millions of tube present in both kidney are called it nephron. Main function of nephron is filtration. Pores are present on it. Stuff of neurons form the glomerular capsule.

Filtration occurs through nephrons.

Parts of kidney play role in junctions:

- 1- Nephron.
- 2- Bowman's Capsule
- 3- Glomerulus.
- 4- proximal convoluted tubule
- 5- Distal convoluted tubule
- 6- collecting tube
- 7- loop of Henle.

Filtration process:



Structure of nephron

Steps:

Millions of Nephrons are present in kidney. These nephron

perform the function of filtration.

2- Filtration:

Filtration process starts from the nephron network, known as Glomerulus. Glomerulus is a network of nephrons. After entering the blood into glomerulus, through afferent arterioles process of filtration starts. After that nutrients transfer into Bowman's capsule.

2- Ultrafiltration:

After passing from the Bowman's capsule. Nutrients pass into the loop of henle and proximal convoluted tubules. Here selective reabsorption occurs. Some of nutrients which are useful for body, passes ~~to~~ them into blood stream.

→ Reabsorption occurs here, majority of reabsorption occurs in the proximal convoluted tubules, where the epithelial cells lining

The tubule actively transport substances from the tubules fluid back into the blood stream.

→ Through distal collecting tubules blood goes into the blood stream through tubules and waste products collect into the collecting tubules.

Collecting Ducts

→ Collecting duct passes the urine into the pelvis. Collecting duct performs the another function during urine passing if the water quantity is less in your body, it makes the wall porous and reabsorb the water. This action is done by the ADH hormone.

— (C) —
How Black Holes are formed?

Introduction.

Black Holes are formed due to the massive explosion of stars. Explosion occurs in group of stars due to the energy

reaction, and a singularity is formed.

Gravitational pull around this singularity is so intense that not even light can escape from it, and it leads to the

formation of Black hole.

Steps involved in the formation of black hole.

- 1- Formation of Massive stars.
- 2- Depletion of Nuclear fuel
- 3- Supernova explosion.
- 4- formation of Singularity.
- 5- Black hole formation.

Formation of Massive stars:

In the formation of black holes, first step was the formation of

massive stars. These stars were bigger than the sun. Reaction was causing in them. A nuclear reaction changing from helium to hydrogen was doing in them. During their nuclear fusion phase, they produce energy by fusing lighter elements into heavier ones, and this energy counteracts the gravitational force trying to collapse the star.

2- Depletion of Nuclear fuel:

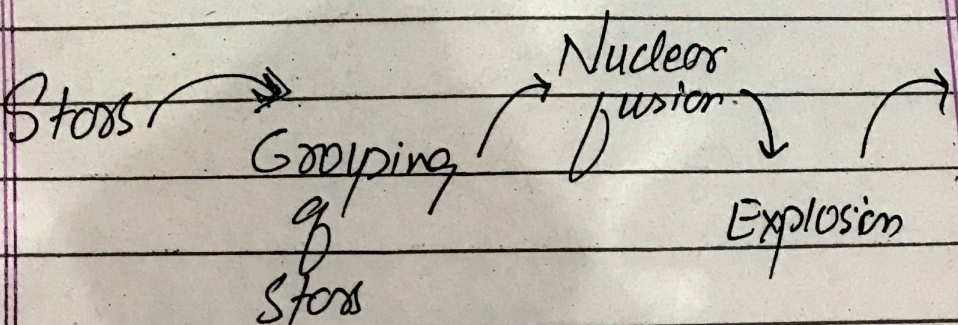
Once a massive star, deplete its nuclear fuel. The outward pressure generated by gravitational force and the process of nuclear fusion decrease. Increase the gravitational force, core of star collapsed and explosion burst.

Supernova explosion.

This collapse of stars formed the Supernova. This explosion expels the outer core of stars into space, leaving behind a dense core.

4- Formation of Singularity.

The remaining core which left after the removing the outer layer of stars. This dense material forms the Singularity, infinite density core. The gravitational pull around this Singularity is so intense that even no light can pass from it. It formed the black hole.



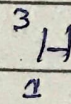
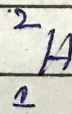
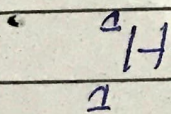
Isotopes:

Isotopes is defined as the atoms whose ~~atomic~~ have same number of proton but different number of neutron is called isotopes.

Isotopes of Hydrogen:

Isotopes of Hydrogen have same no of proton but different number of neutron.

Hydrogen has three isotopes protium, Deuterium, tritium



Isobars:

Isobars are atoms and ions have same mass number but different atomic numbers.

Example:

Carbon ${}^{14}_6\text{C}$ - mass number 14 and atomic no (6)

Nitrogen ${}^{14}_7\text{N}$ - mass number 14 and atomic number (7)

Isotopes: Isotopes are atoms
and ions have the same
number of protons but
different numbers of neutrons
called Isotopes.

Chlorine $\begin{matrix} (37) \\ (20) \end{matrix} \text{Cl}$ — Neutrons
Potassium $\begin{matrix} (39) \\ (20) \end{matrix} \text{K}$ — different protons
Neutrons

Some numbers end different protons

QNO:4

(A)

How Earthquakes are generated

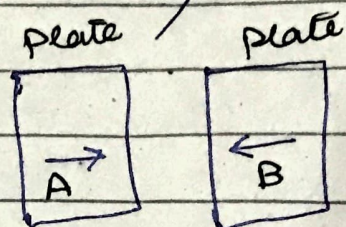
Earth quakes generation is a natural process. Due to the formation of seismic waves. Tectonic plates which are present below the earth change their position. Due to the changing position of the tectonic plates, earthquake is generated.

There are three main types of plate boundaries where an earthquake commonly occurs.

- 1- Convergent boundaries
- 2- Divergent boundaries
- 3- Transform boundaries.

2- Convergent boundaries,

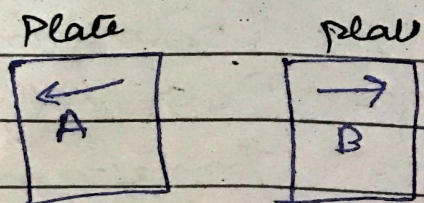
Convergent boundaries are formed when two tectonic plates move close to each other. After coming each other, they collapse and pressure at these boundaries lead to the release of energy, causing earthquakes.



Convergent

2- Divergent Boundaries,

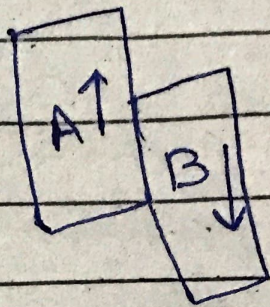
Divergent boundaries are formed when two tectonic plates move away from each other. Formation of distance between these two plates become the reason of earthquake.



Moving apart from each other

Tsunami Boundaries:

Tsunami boundaries, are formed in which position of tectonic plate is changed. Two tectonic plates slide past each other horizontally. The friction between plates prevents smooth movement, and the stress over this friction, earthquakes occur.



Tsunamis:

~~The~~ Tsunami is a natural disaster. It occurs due to earthquakes, volcanoes and waves. In tsunami large body of water is moved from one place to another.

Causes:

Earth quakes, Volcanoes
eruptions or landslides are
the main reason of tsunamis.

→ In tsunamis large wavelength
of water is formed. In deep
waters they may not be
noticeable, but as they approach
shallower coastal areas, they
can grow in height.

Effects

→ Tsunami can cause devastating
flooding and damage to
coastal regions. The force of
waves can cause total
destruction.

(B)

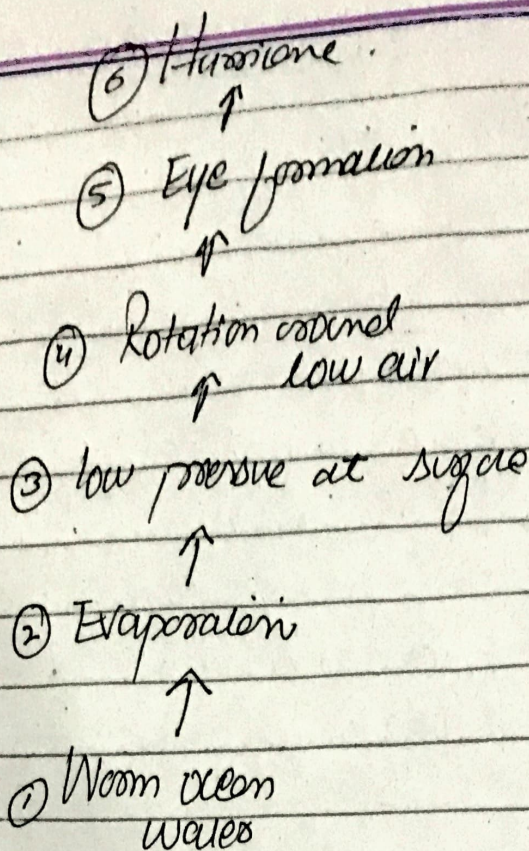
Coriolis force:

Coriolis force is an apparent force that acts on a mass moving in a rotating system, such as the Earth. It is responsible for the deflection of moving objects, including air and water masses.

Generation of Hurricanes:

Hurricanes also known as typhoons and cyclones in different regions are powerful tropical storms with strong winds and heavy rainfall. They form over warm water ocean waters near the equator and are driven by release of latent heat from the ocean surface.

Process of hurricane formation typically involves the following steps.



(1) Role of warm ocean waves is very important. It provides the energy for forming the storm. At least 26.3°C water temperature forms the hurricane.

(2) Vapour of warm water condense into the clouds. This process releases latent heat into the atmosphere.

(3) The releasing of latent heat forms the low pressure system

at the surface. Air from surrounding areas with high pressure moves towards the low pressure.

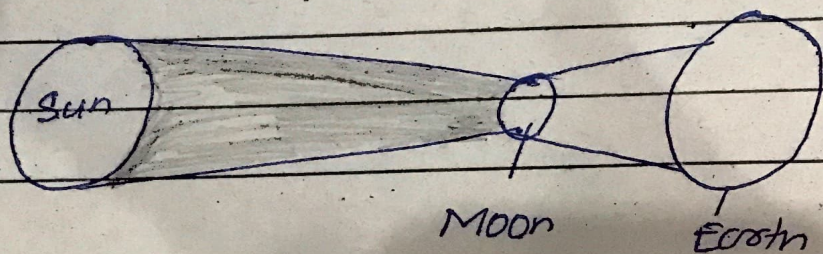
(4) low pressure inside and high pressure air create a eye formation and start rotating around it.

(5) Hurricane continues to grow and intensify as long as it remains over warm water. It can bring winds, heavy rainfall etc.

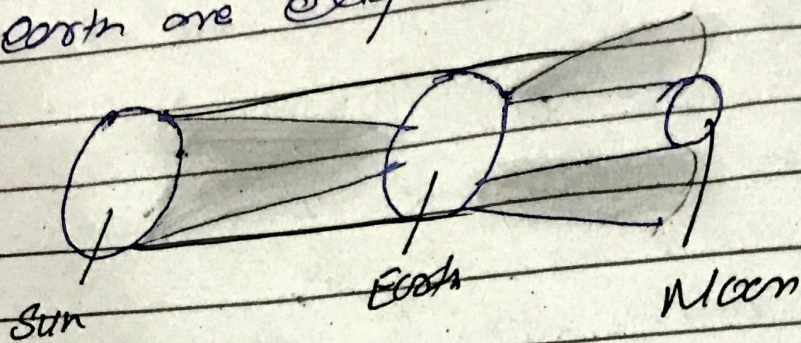
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(c) —————

Solar Eclipse:

Solar eclipse is formed when moon passes between the sun and earth. It blocks the sun's light.



Lunar: Lunar eclipse occurs when earth comes between the sun and moon. It occurs when sun, moon and earth are aligned.



(2)

Doping in Semiconductor:

Doping is the process of intentionally introducing impurities into a semiconductor material to alter its electrical properties. Semiconductors such as silicon and germanium materials with a specific number of electrons and holes

Ceramics

Ceramics are a broad class of inorganic, non metallic materials with a range of properties, often characterized by their hardness, brittleness and resistance to high temperatures.

Types of Ceramics

- ① Traditional
 - pottery, tiles
- ② Refractory.
 - Fire bricks.

Section II

Q. NO : 6

⑦ $F-5, S-5$ Five years ago.
 $F-5 = 3(S-5)$ father age three.
 $F-5 = 3(S-5)$ $S = 30$ present age.

$F-5 = 3(30-5)$ $F = 75$

$F-5 = 3(25)$ $F-5 = 75$
 $F = 80$

(B)

Mean of 10, 30, y, and 50 is 50
value of y.

$$\frac{10+30+y+50}{4} = 50$$

$$\frac{90+y}{4} = 50$$

$$90+y = 200$$

$$y = 200 - 90$$

$$y = 110$$

(C) Missing no

$$\underbrace{2}_{2 \times 3}, \underbrace{6}_{6 \times 3}, \underbrace{18}_{18 \times 3}, \underbrace{54}_{54 \times 3} \quad (112) \text{ Ans.}$$

$$3125, 256, \underline{125}, 4, 1. \text{ Ans.}$$

$$5^5, 5^4, 5^3, 5^2, 5^1$$

(D)

$$x \cdot 5x = 320$$

$$5x^2 = 320$$

$$x^2 = \frac{320}{5}$$

$$x^2 = 64$$

$x = 64 \text{ B}$
So, the two numbers are 8×8

$$(40)^2 - (0)^2$$

$$1600 - 64 = 1536$$

$$= (40)$$