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MOLK.

CK-1. General Science and Ability

Part - II

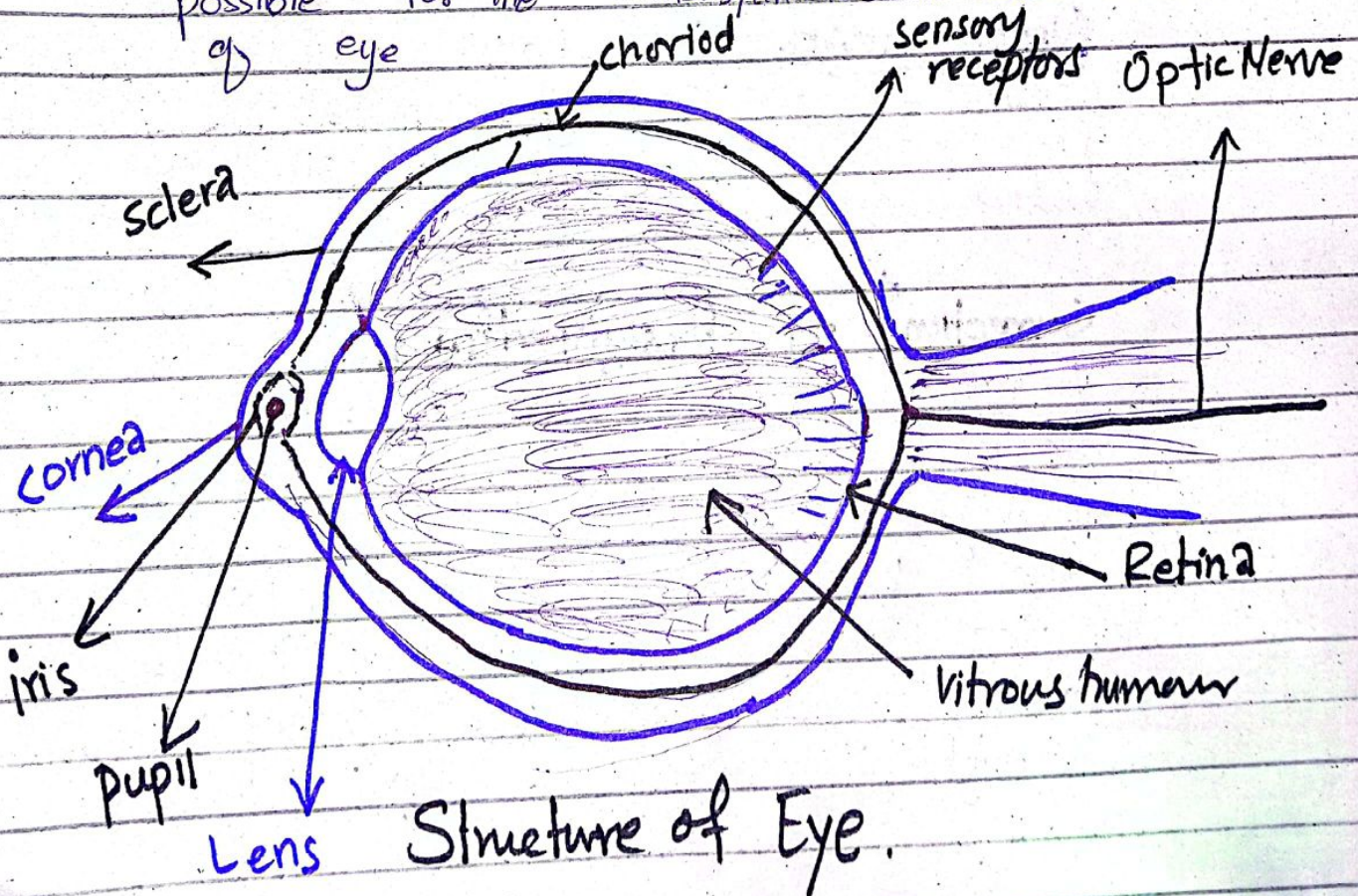
Section - 1

Q#03

a. Discuss ^{different} different part of eye. How far-sightedness & short-sightedness ^{distance} can be corrected?

Answer

Eye Eye is sensory organ which plays an important role in vision. It is possible for the humans/animals to see because of eye



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Description

Cornea - Cornea is the first layer or frontal layer of eye. Light waves first interact with cornea.

Sclera - It is second layer of eye after cornea on the frontal side.

Iris and choroid - Iris is a redish matter surrounding the pupil. Choroid contain small capillaries which provide nourishment. It contain optic Nerve.

Pupil - A pupil is a small dark spot. Light rays enter the eye through pupil.

Retina - It is most important part of the eye. It contain sensory receptors. Image is formed on the retina.

Optic nerve - Optic nerve contain neurons. It takes image information from the retina toward brain. Where brain recognizes image.

Correction of farsightedness.

A person is unable to see ~~near~~ near objects clearly. It can be corrected through surgery. lens transplant is the best way to treat farsightedness. Otherwise it can be treated glasses. It can be treated through the use of convex lens.

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An eye suffered from farsightedness

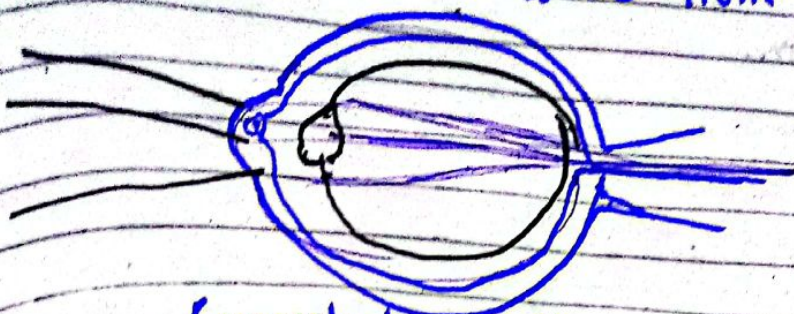
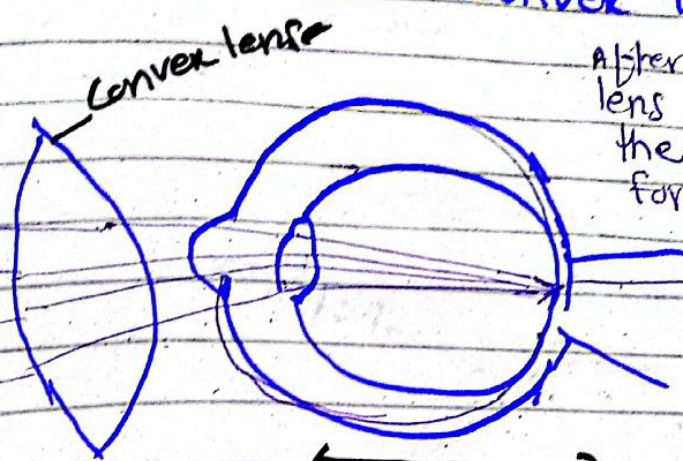


image is formed behind the retina.

Corrected with convex lens



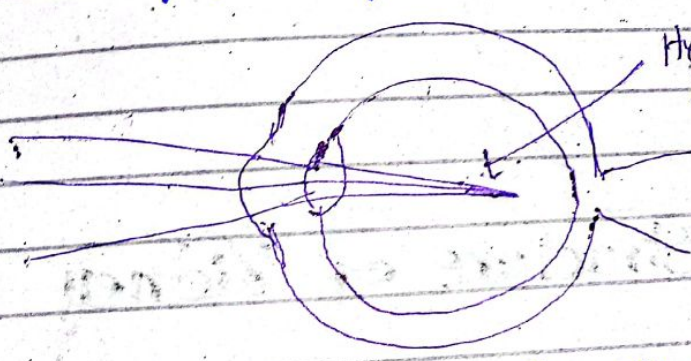
After treating with convex lens light is focused on the retina. Hence, image formed on the retina

image formation

Correction of Short-sightedness myopia.

It can be corrected through using concave lens.

Myopian eye



Here image is formed in front of the retina

Corrected with concave lens

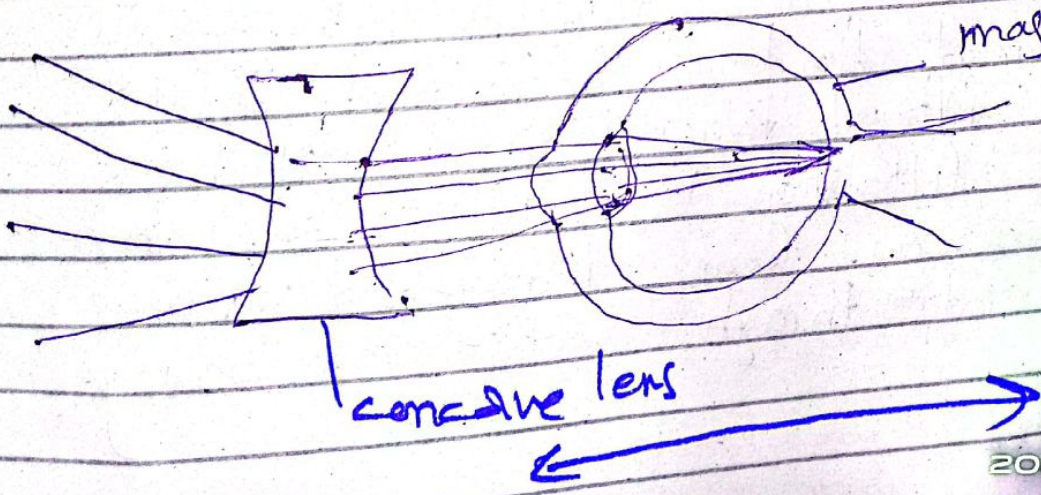
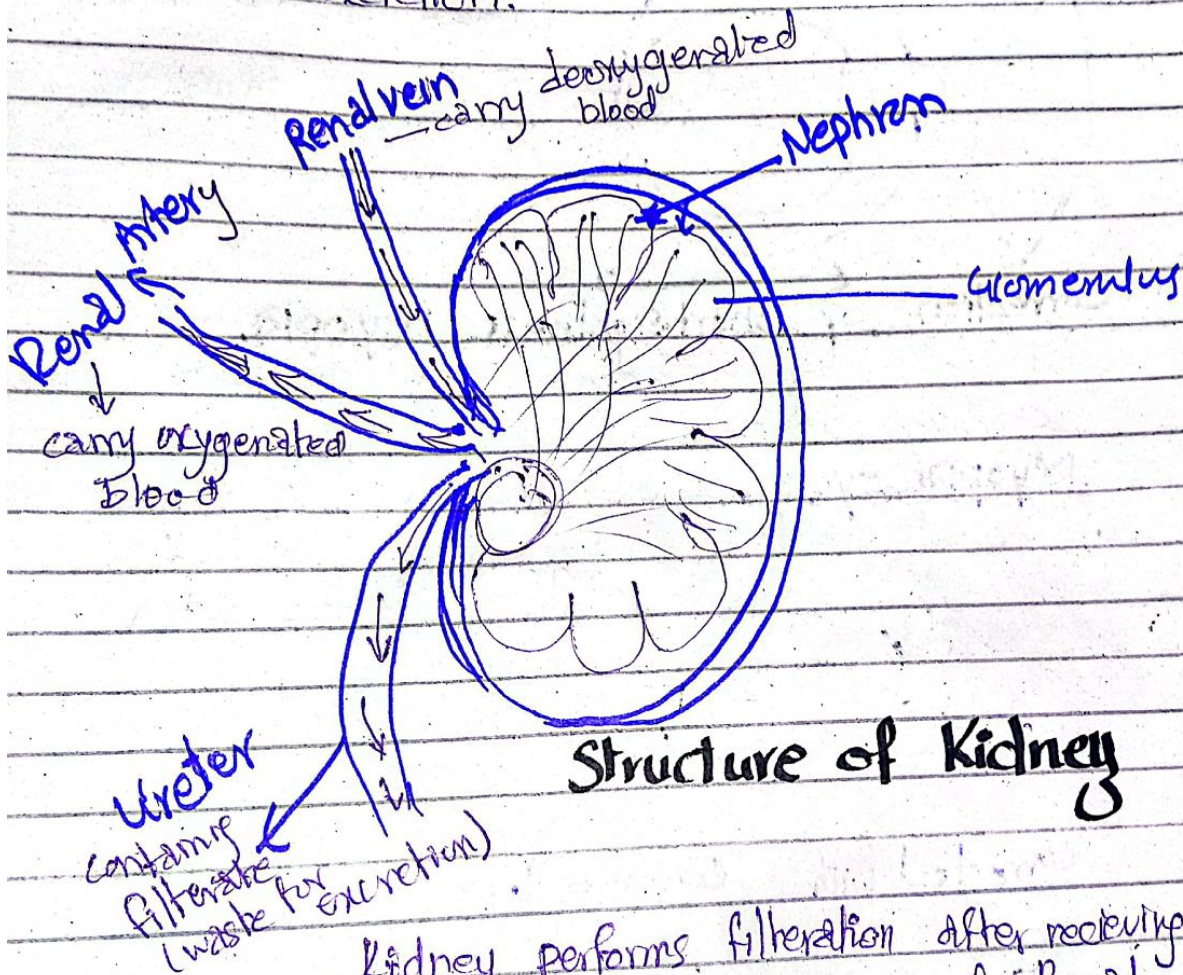


image has formed on the retina

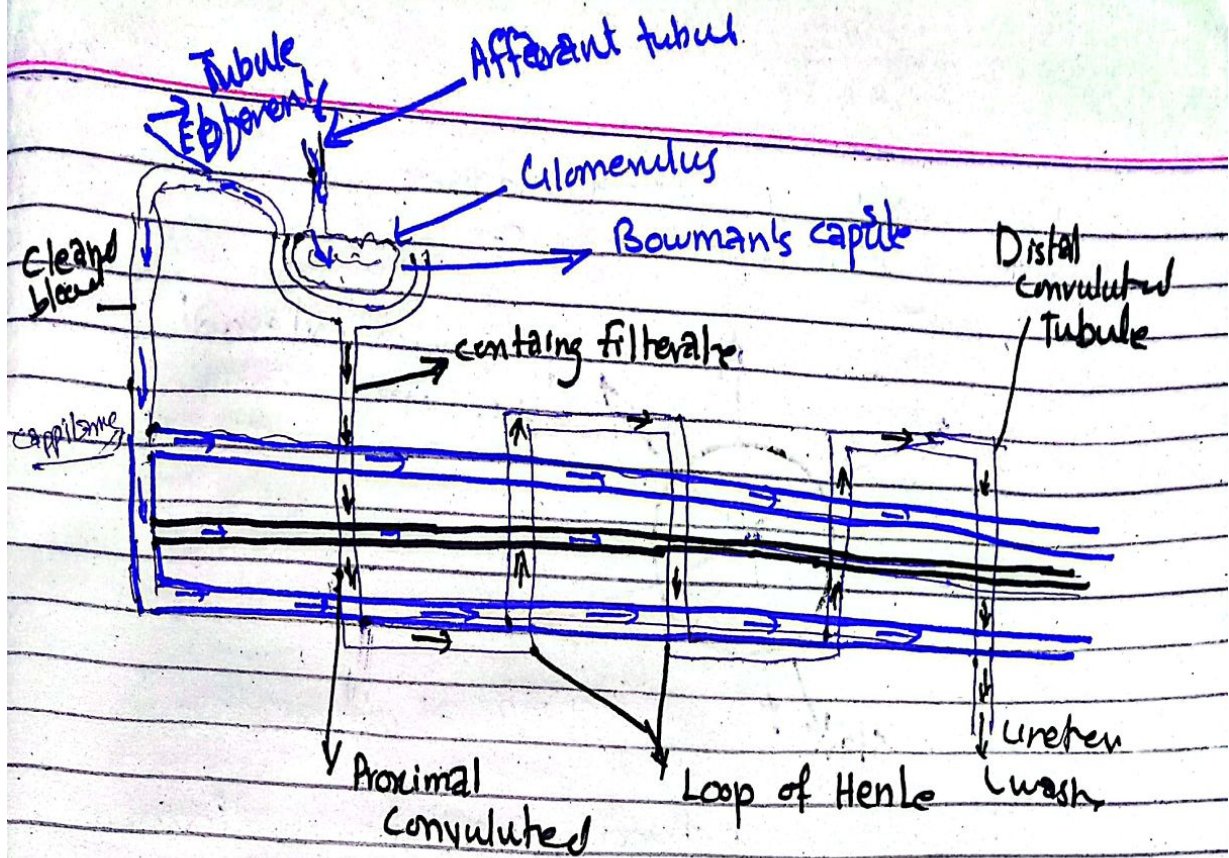
concave lens

Q#03 (b). How does a kidney work? Explain with Diagram.

Kidney kidney performed role in the filtration of blood and reabsorption of nutrient, minerals and water. It has a role in the excretion of waste. Nephron is the smallest structural and functional unit of kidney which plays role in filtration and excretion.



Kidney performs filtration after receiving uncleaned blood with the help of Renal vein. Filtration takes place in Nephron. After filtration renal artery carry cleaned blood away from kidney and waste removed through ureter from kidney.



Structure of Nephron.

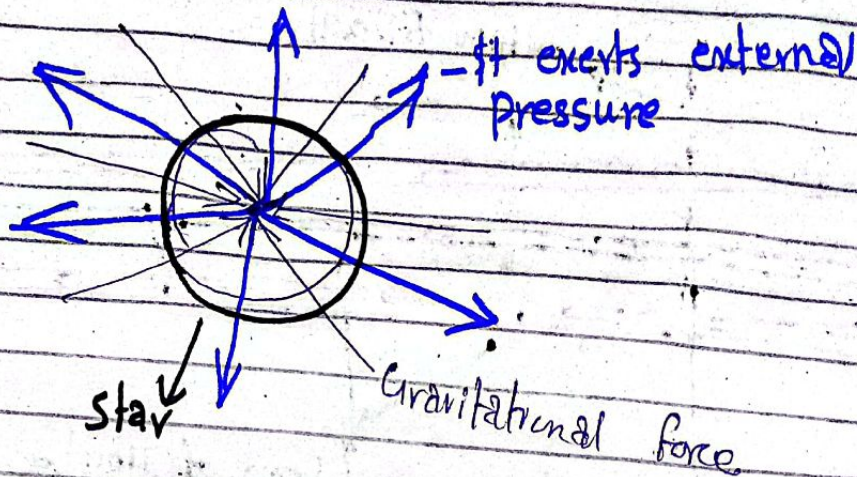
In nephron filtration takes place in the glomerulus. After filtration filtrate is transferred with the help of proximal convoluted tubules and distal convoluted tubules.

Proximal convoluted tubules helps in the reabsorption of water, Loop of Henle absorbs salts and DCT reabsorbs minerals from filtrate.

c) - How black holes are formed?

Black holes are formed after the contraction of stars. When stars collapse due to the imbalance between the gravitation pull of the body and its external pressure. It causes to reduce the size of the star. If density becomes larger.

Black hole is more denser and with high temperature.



The balance between gravitational force and pressure causes the star to remain in equilibrium position. The disturbance in the balance causes to collapse the star and it become dwarf.

Q1. What are isotopes, isbars and isotones? Give examples of isotopes of hydrogen

Isto Ist

Isotopes - An atom of an element having same atomic number but different mass numbers is called isotopes. forexample The two isotopes of Uranium are U_{236} and U_{237} .

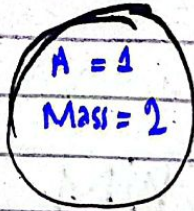
isobars, An atom having different atomic numbers but same mass numbers are called isobars.

Isotopes of Hydrogen

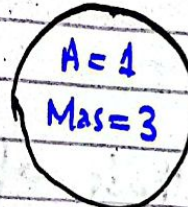
Hydrogen has three basic isotopes with having same Atomic numbers and different mass numbers. They are protium, Deuterium and Tritium.



Protium



Deuterium



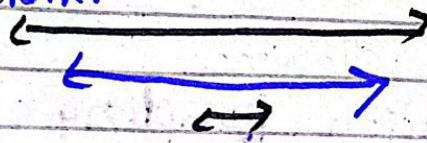
Tritium

Three

atom.

Isotopes

of Hydrogen



Q#02-

a) - What is Solid Waste Management?
Discuss different methods.

Ans

Solid Waste Management

It is the management/disposal of waste in such a way that it reduces the risk of pollution. It is reducing the risk of affecting Environment and living organisms to the minimum level.

It includes the method of collecting waste, transport of the waste to the destination and its safe disposal.

Actors in the Solid Waste Management System.

→ Municipalities, collecting staff, transport vehicles and storage system are the key players of solid waste management system. Most important component of this system is human work force.

Methods of SWM

Different methods are being used for the solid waste Management system. Some of the important methods are following.

- (i) Open Dumping
- (ii) Incineration
- (iii) Composting
- (iv) Landfills.

(i) Open Dumping

Open dumping the disposal of waste openly away from the cities and industrial centres. Waste should be dumped outside the the populated area. Open dumping should highly be discourage because it is unsafe method of disposal.

(ii) Incineration: -

It is the burning of waste in the incinerators by increasing its temperature to thousands of degrees. It is mostly

used to incinerate hospital waste and municipal waste. But it releases by products as Sulphur dioxide and carbon monoxide which are very much dangerous.

(iii). Composting

Composting is good method of solid waste management system through organic methods. It's most famous type is composting using small microorganisms and worms.

(iv) Landfills.

Landfills is the most important, reliable and recommended method of solid waste management system. Different methods are used in landfill method. It is the burying of waste.

- a). cell method
- b). Area method
- c). Trench method
- d). Combined method / slope method.

Most common and important from them is cell method. Landfills are filled with the solid waste by the cell method. Different cell are formed and then buried them under soil and the clay. Proper sewage system and leachates are formed in this system.



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c) - Write a note on Balanced diet.

Balanced Diet

Balanced diet is the concept of taking meal which should contain sufficient amount of nutrient, minerals, vitamins which are necessary for the normal growth and good health.

It contains enough amount of carbohydrates, proteins, lipids, vitamins and other nutrients. Lack of such nutrient and excession cause different diseases.

① Carbohydrates:-

Carbohydrates are the organic compounds which are necessary for the life activities of living organisms. They are larger organic compounds and can be breakdown into the small compounds through metabolism.

Different forms of carbohydrates contain Glucose, Lactose, Maltose, Fructose and starch etc. The most common and essential form of carbohydrate in animals and plant is glucose $C_6H_{12}O_6$.

Types of carbohydrates include Polysaccharides, Monosaccharides and Disaccharides.

(i) Mono sacrides. These are the simplest forms of carbohydrates. It contains smaller unit of carbohydrates. It contains one carbohydrate molecule.

(ii) Disacrides. It contains two carbohydrate molecules.

(iii) Polysacrides. - It includes three or more than three compounds



②. Proteins. Proteins are the organic compounds which are essential for the normal functioning of body. Amino acids are the building blocks of proteins. They are the structural and functional unit of protein and exist in chain form. For example: Haemoglobin is an important blood protein that is also called as red protein. It play role in blood clotting and

③. Lipids

Lipids are the organic compounds made up of fatty acids. Fatty acids are the building block of lipids. They are found in fats, oily products and dairy products.

④. Vitamins.

Vitamins are the

essential nutrients. There are two types of ~~the~~ vitamins. Water soluble vitamins and fat soluble vitamins. It includes Vitamin A, D, E, K, C and omega 3 etc.

Balance diet should contain all these essential nutrients and elements for normal functioning of organisms.

←————→
d) - Discuss any three renewable energy resources under CPEC.

China Pakistan Economic Corridor (CPEC) is ^{among} the largest parts of Build and Road Initiative (BRI). It has launched several energy projects in Pakistan.

The three most important renewable energy projects under CPEC are Solar Energy projects, Wind energy projects and Hydral projects.

(A) - Solar energy projects :-

Solar energy is the generating and using energy of the sunlight. Sun is the biggest source of energy in the world. In this process solar panel containing solar cells receive sun's energy, absorb it and then

convert it into other useable forms of energy. Under CPEC there is a solar project working in Bhawalpur. Its name is **Quaid-e-Azam Solar Park Bhawalpur**. It is generating energy of 900MW. It is a source of clean energy, pollution free and renewable energy source.

(2). Wind Energy Projects.

In this project energy is generating through turbines. High speed air moves the turbines which then generate electrical energy. Under CPEC several projects of wind energy are working in the coastal areas of Baluchistan and Sindh. One important project under this corridor is **Dalbindeen** in Baluchistan.

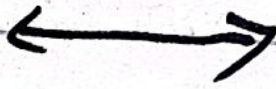
3)- Hydral energy projects.

It is the process of generating energy from water. In Pakistan it is done generating by forming dams. Under CPEC there are ~~large~~ several number of dams built in Pakistan. It include Suki Kanari Hydropower project it generate energy of 1800 MW. There are

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Five operational hydal power projects in Gilgit Baltistan with each having capacity of 100MW.

All these are the Renewable form/sources of energy working under CPEC projects.



Q # 07.

a) -

Ans.

Solution

Sold two scooters = 96000 each
on 1st

Profit = 20%

loss % on 2nd = 20%

Total gain or loss Percentage = ?

Sol

$$\text{Profit / loss } 20\% = \frac{20}{100} (96000)$$

$$\text{Profit / loss} = 19200$$

$$\text{Total profit / loss \%} = \frac{19200 \times 100}{96000} = 20\%$$

Total profit or loss Percentage is 20%.

b). Give Data.

Men = 195

Days = 20

hours = 10

Men = x = ?

Day = 15

hour = 13

Sol

Men	hours	Days
195	10	20
x	13	15

$$\frac{x}{195} = \frac{10}{13} \times \frac{20}{15}$$

$$\Rightarrow x = \frac{10^2}{195} \times \frac{20}{183}$$

$$\frac{x}{195} = \frac{40}{39}$$

$$x = \frac{40}{39} \times 195$$

$$x = 200$$

Hence, The number of men will be increased to 200.

$$c) - A = \{ a, e, i, o, u \},$$

$$U = \{ a, b, c, \dots, z \}$$

Find A' .

Sol

$$A' = U - A$$

By putting information in equation,

$$A' = \{ a, e, i, o, u \} - \{ a, b, c, \dots, z \}$$

$$A' = \{ \} \text{ or } \emptyset$$

So A' is equal to \emptyset or null set.

d). Square has volume = 372 cm^3
height = 3 km

Perimeter of base = ?

Sol

Perimeter of a square = a^4

$$\text{Perm} = (3)^4$$

$$\begin{aligned} \text{Perimeter} &= 3 + 3 + 3 + 3 \\ &= 81 \end{aligned}$$

So

Perimeter of a square = 81



Q#06

a).

Current age of son = 30

Sol

Five years ago age of son = 25

Five years ago age of father thrice = $3(25)$
 $= 75$

Current age of father is $= 75 + 5$
 $= 80 \text{ years}$

So the current age of father is 80 years .



(b). Mean of $10, 10, y, \& 50$
is 50
value of $y = ?$

Sol

Mean = $\frac{\text{Sum of all the observations}}{\text{Number of total observations}}$

After putting values we get

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

$$50 \times 4 = 10 + 30 + 50 + Y$$

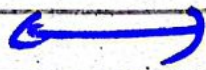
$$200 = 90 + Y$$

$$Y = \frac{200}{90}$$

$$Y = \frac{20}{9}$$

$$Y = 2.2$$

So value of $Y = 2.2$



c) - missing terms.

$$(i) \quad 2, 6, 18, 54, \underline{162}$$

$$2, 6, 18, 54, 162$$

every/each number of the series is

multiplied by three so the missing number is 162

$$(ii) \quad 3125, 256, \underline{\quad}, 4, 1.$$