

PART II (SECTION A)

Q. NO. 2 (a)

① Circulatory System:

Human organ system which helps in circulation of blood throughout the body parts is called as human circulatory system. It comprises following important components

(i) **Heart:** Heart is the pumping organ and most vital part of circulatory system which pumps the blood into blood vessels.

(ii) **Blood Vessels:** These are network of small tubules extended throughout the body and help in circulation.

It consists of three types

• **Arteries:** These contain oxygenated blood and circulate it from heart to whole body.

• **Veins:** They transport de-oxygenated blood from body again to heart.

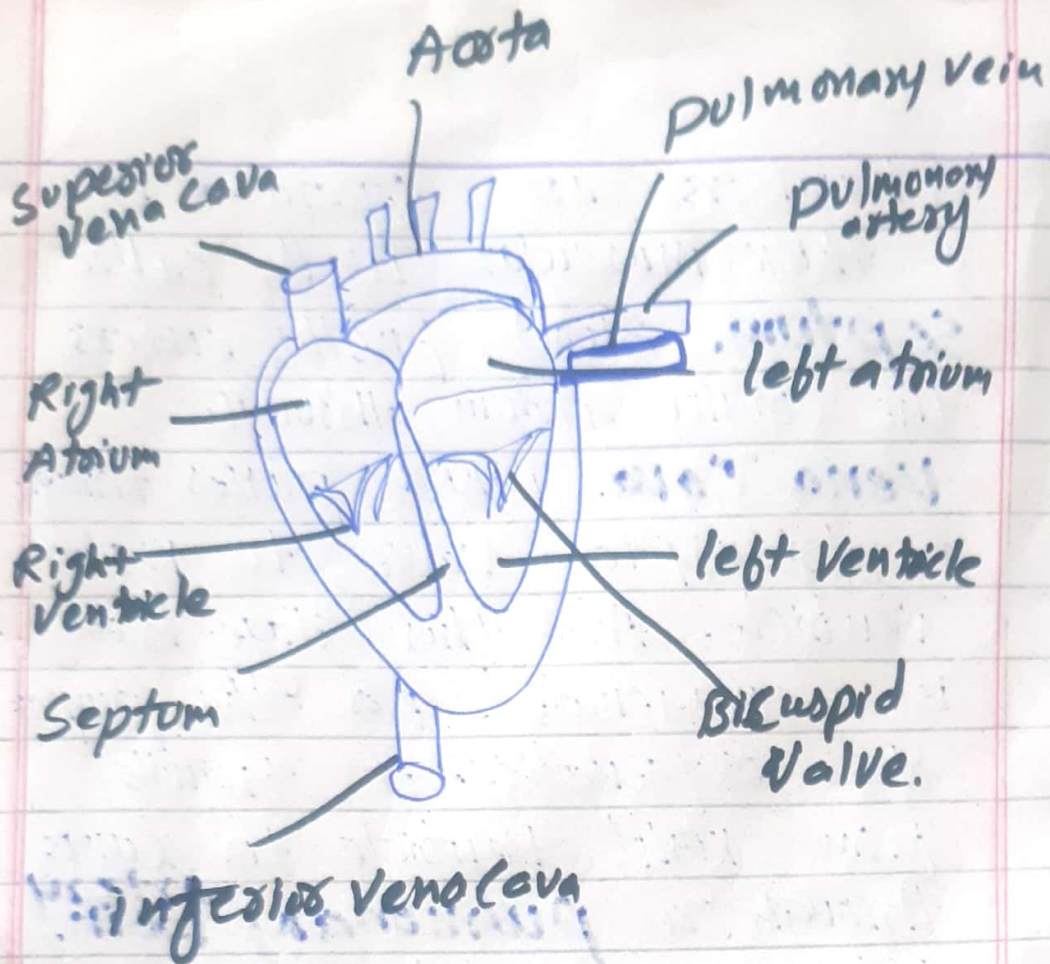
• Capillaries: These are most thinner blood vessels which carry blood to each cell.

(iii) Blood: This is ^{also} the important part and is circulating fluid, Red in colour. It consists of different type of cells such as Erythrocytes (~~white~~ Red blood cells), Thrombocytes (platelets) and Leukocytes (white blood cells). All these help in transport of oxygen, repairing of wounds, and providing immunity to the body respectively.

Q Role of Human heart in Circulatory system:

Human heart plays a pivotal role in human circulatory system. It consists of four chambers. The two upper layers are called **Atria** while the two lower chambers are known as **Ventricles**. All these

Chambers are separated by a thick muscular wall called **septum**. Blood firstly enters the right atrium through **Vena Cava**, which passes through a **tricuspid valve** to right ventricle. At this stage blood is deoxygenated. For the purpose of oxygenation, it travels from right ventricle to lungs through a **pulmonary artery**. ~~After~~ Once, it gets oxygenated, it travels through **pulmonary vein** to left atrium. Left atrium contracts and pushes the blood via **bicuspid valve** into left ventricle. After contraction of ventricle, blood passes through **semilunar vesicles** and reaches **Aorta**. Aorta then transports the blood to all parts of the body by the help of blood vessels.



(b) Carbohydrates:

These are hydrated carbons which contain Hydrogen and oxygen with a ratio similar to water (H_2O).

e.g. Glucose ($C_6H_{12}O_6$), Sugar ($C_{12}H_{22}O_{11}$)

Maltose, Galactose etc.

starch and Glycogen etc.

Classification:

Carbohydrates can be classified into following three main

Categories owing to their abundance.

(1) Monosaccharides:

This is the type of carbohydrate which contains one sugar unit and carbon atoms ranging from 3-6. These are completely soluble in water and give a sweet taste. Main examples are glucose, ^{sucrose} ~~Maltose~~, Galactose, triose, tetraose, pentose, etc.

(2) Oligosaccharides:

This type of carbohydrates possesses sugar units ranging from two to nine. Therefore number of carbon atom is more than 10. They are less or sparingly soluble in water and have less sweet taste. Examples include:

Disaccharides = Maltose, Lactose

Trisaccharides = Maltotriose

Tetrasaccharides, etc.

(3) poly saccharides:

It is the most abundant form carbohydrates which consists of several sugar units - mostly greater than 100. They are insoluble in water. Therefore are + sweeteners.

e.g. starch in plants
glycogen in animals
apart from this Chitin, Lignin and Amylopectin are also the examples of poly saccharides.

(C)

a Water pollution:

When fresh water is contaminated by various means, so that it is not potable to drink, is called as water pollution.

@ Causes:

Water pollution is caused by various activities, following are the main causes.

• Domestic waste:

When Domestic waste is

eliminated in sewerage system
it causes water to pollute.

• Industrial waste:

Many industries produce and eliminate ~~the~~ some heavy metals such as lead, chromium, ^{and} Mercury etc. These are carcinogenic and also impact wild life when eliminated in fresh water sources.

• Nuclear waste:

Nuclear reactors produce a wide range of radioactive waste containing radioactive materials. These pollute the water when are excreted to a water reservoir.

③ Effects:

Following are the main effects of water pollution

• Water born disease

When water is polluted it becomes a source of causing diseases in human beings. Because polluted water acts as

a breeding ground for various insects including mosquitoes and Dengue, etc. such water causes following diseases: Hepatitis, Tuberculosis, Jaundice, Diarrhoea and Cholera, etc.

- producing dingy smell:
polluted water, especially water from sewerage system causes a dingy smell in the surrounding. That is too pungent that people feel suffocated while passing there.

(d)

Liver as a Chief Chemist:

Liver is the second most largest organ of human body, after skin. It plays a vital role in metabolism of the body. Similarly, it is also called as the chief chemist of the body because it involves many a reaction which bless it this name. For instance

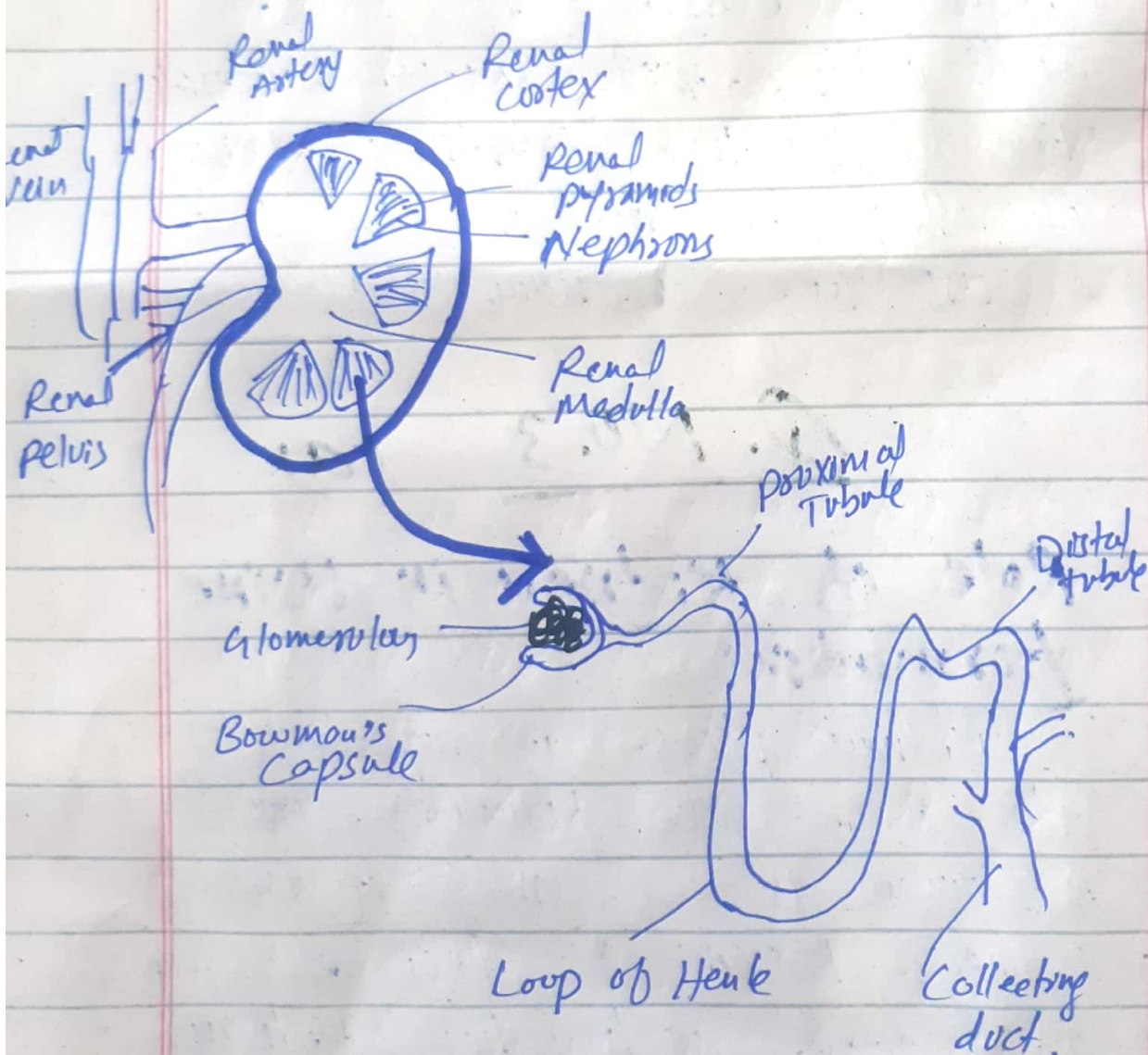
Liver. helps in urea formation via ornithine or urea cycle. It helps in detoxification of various drugs and toxic materials. ~~Another~~ most important function of Liver can be witnessed by the presence of gall bladder — The greenish fluid present on Liver. Gall bladder contains a greenish juice which is comprised of salts and other lipid digesting materials. This helps in digestion of food as the secretion of bile juice occurs in duodenum.

Q. NO. 3 (a)

Role of Kidney in Urine Formation:

Kidney plays an important role in urine formation. ~~It~~ A Human body consists of two kidneys having a shape of bean seed. Both these kidneys contain millions of nephrons

These nephrons, actually, are the filtration plants of our body. Nephrons contain are tubular structures containing the following parts: Bowman's capsule, glomerulus, proximal tubule, distal tubule, and collecting duct. All these parts act in filtration of urine while sending back the essential elements to blood vessels.



(b)

a Remote sensing:

This is a modern technique in which infra red signals or other electromagnetic signals are used for sending messages to far distances, especially to satellites or other distant objects.

b Role in environmental science:

Remote sensing plays an important role in environmental science.

Because it is helpful in various ways:

a prediction of disasters:

With the help of remote sensing satellites and remote sensing techniques, scientists are now able to predict the natural disasters which are to occur in near future.

e.g. cyclones, floods, volcanic eruptions etc.

(b) Feather fire casting:

Remote sensing helps in

weather forecasting. Now everyone is aware of that what will happen in next few days? Whether it will rain, snow, or hell etc. all this is made possible due to remote sensing.

(c) exploring mineral sites:

With the help of remote sensing scientists and mineralogists now detect the sites. They can detect the presence of gold, iron, copper, silver, platinum, etc.

(d) Greenhouse effect:

This is the process by which the earth's heat is trapped inside the atmosphere of earth due to green house gases such as CO_2 , NO_x , O_3 , etc.

Benefits:

⇒ It helps in normalizing the temperature in cold season

⇒ It helps in plants rapid ...
growth.

⇒ It helps the nurseries to
extend their business.

Contribution to Global Warming:

As far as the global warming is concerned, the prime factor behind this ~~inference~~ inference is green house effect. As green house gases trap the earth's heat from going outside. The average temperature of earth is increasing day by day. Average temperature of earth is 15°C , but according to scientists since industrial revolution around 1.7°C rise has been witnessed.

(d) Food Preservation Methods:

Food can be preserved by various techniques. Following are some useful techniques and commonly used ones.

(10) Pasteurization:

In this process food items are heated for around 15 minutes at a specific temperature which helps in preserving the food from attack of germs.

(11) Freezing:

Some food materials are kept at lower temperatures than zero °C. This process is called freezing.

(12) Drying:

It is another process for preserving food items, especially meat and some fruits and vegetables. In this process food materials are dried to eliminate water completely.

(13) Canning:

It is widely used technique by which food materials are pasteurized and then stored in small cans (made up of Aluminium). Now-a-days major portion of food is packaged by this way.

Section B

(a)

Solution

	present	past
son	30	$30 - 5 = 25$
Father	$3(30) = 90$	$90 - 5 = 85$

Hence current age
of father is **85** years

(b)

Data =

income tax = 10%

Income tax money = 1500

Total income = ?

Solution

According to formula

$$A \times \frac{\text{per}}{100} = B$$

Here A is larger no = ?

B is smaller no. = 1500

hence

$$A = \frac{100}{\text{per}} \times B$$

$$A = B \times \frac{100}{\text{per}}$$

$$A = \frac{1500 \times 100}{10}$$

$$A = 15000 \text{ Rs}$$

(d)
Find the missing one

(i) $8, 4, 32, 7, 5, \underline{\quad}$

$8 \times 4 = 32$
 $7 \times 5 = 35$

$$8 \times 4 = 32$$

$$7 \times 5 = 35$$

Hence

$$8, 4, 32, 7, 5, \underline{35}$$

(ii) $17, 19, 23, \underline{\quad}, 31, 37$

$17 \times 2 = 34$
 $19 \times 2 = 38$

These follow the order of prime numbers, hence

$$17, 19, 23, \underline{29}, 31, 37$$

Q. NO. 8 (a)

Data =

$$\text{Total Area} = 24 \text{ sqm}$$

$$\text{Liters required} = 3L$$

percentage increase = ? :

Solution

Firstly we find that 50.4 sqm requires how much liter

Hence,

24 sqm requires 3L

$$1 \text{ sqm require} = \frac{3L}{24 \text{ sqm}}$$

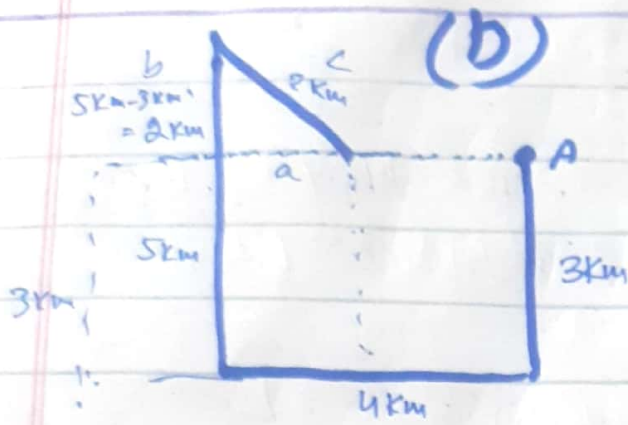
50.4 sqm will require =

$$\frac{3L}{24 \text{ sqm}} \times 50.4 \text{ sqm} = \boxed{6.3L}$$

Now,

Liter	percentage
↑ 3L	↑ 100
↑ 6.3L	↑ x
$\frac{6.3L}{3L} =$	$\frac{x}{100}$

$$\frac{2.1}{34} \times 100 = x$$
$$= \boxed{210\%}$$



Applying the formula

$$a^2 + b^2 = c^2$$

$$a^2 = c^2 - b^2$$

$$a^2 = 2^2 -$$

(c)
 Solution: ~~Astam~~ ^{Tahir}'s Share = 15,000
 Umar's Share = 30,000
 Usman share = 45,000

There ratios

Tahir : Umar : Usman
 15000 : 30000 : 45000
 1 : 2 : 3 = 6

Total profit = 406000

Tahir's profit = $\frac{1}{6} \times 406000$
 = 67666.66

$$\text{Umar's Share: } \frac{2}{6} \times 406000$$

$$= \boxed{135333.32}$$

$$\text{Aslam's profit} = \frac{3}{6} \times 406000$$

$$= \boxed{202999.98}$$

(d)

Data =

$$\text{property} = 6,40,000$$

$$\text{Debt} = 40,000$$

$$\text{Burial expenditure} = 5,000$$

$$\text{share of widow} = ?$$

$$\text{share of daughter} = ?$$

$$\text{share of two sons} = ?$$

Solution

$$\begin{aligned} \text{Net property} &= \text{Total property} - \text{Debt} - \text{Burial} \\ 595,000 &= 640,000 - 40,000 - 5,000 \end{aligned}$$

$$\text{Share of widow} = \frac{1}{8} \times 595000$$

$$= \boxed{74375}$$

$$\text{Remaining money} = 595,000 - 74375$$

$$= \boxed{520,625}$$

share of daughter = 1 + 2

$$\frac{1}{3} \times 520625$$

$$= 173541.6$$

share of son

$$\frac{2}{3} \times 520625$$

$$= 2 \times 173541.6$$

$$347083.2$$

share of each son