

## General Science and Ability (Mock-4)

## Part-II

## (Section - A)

Q. No. 2

a. Answer : Circulatory System :

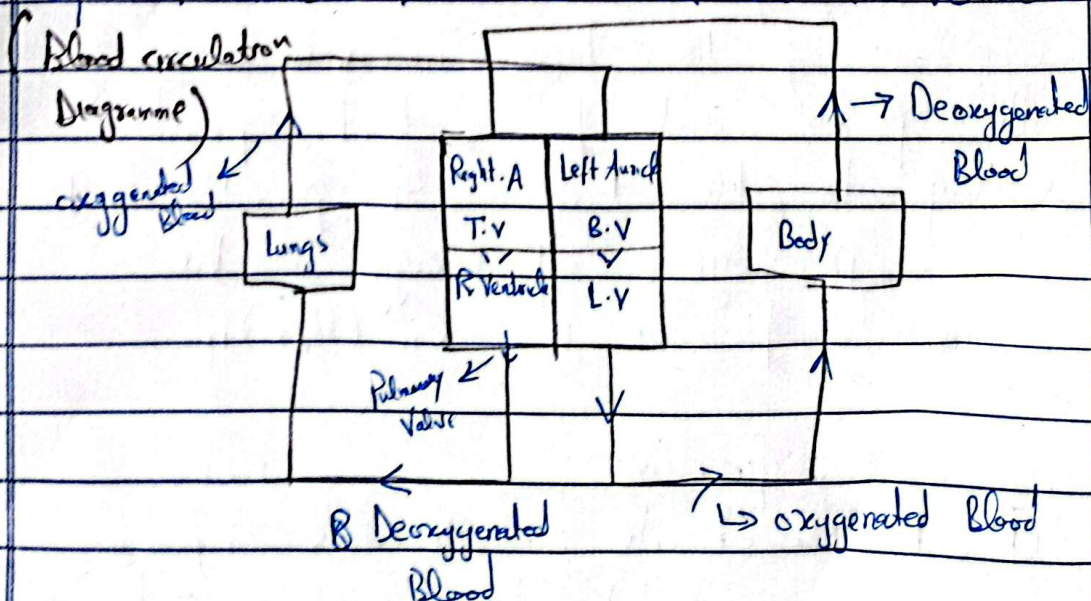
It is also called a Cardio-Vascular system.

It is an organ system that permits blood to circulate and transport nutrient (amino acids, electrolytes), oxygen, carbon dioxide, hormones etc around the body through a process called as circulation process.

It consists of heart and blood vessels.

### Role of Human Heart in Circulation of Blood :

The heart is a muscular organ located in the chest, slightly to the left. It acts as a pump that propels blood throughout the body. The heart consists of 4 chambers : two atria and two ventricles



The right side of the heart pumps deoxygenated blood to the lungs where it gets oxygenated and return to left auricle of heart this process is pulmonary circulation.

While the left side of the heart pumps oxygenated blood to the body where it gets deoxygenated and return to Right side / vent auricle of heart, the process is called Systematic circulation.

This is how the process complete and cycle continues to ensure the continuous circulation of blood throughout the body.

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Q. No. 2

b. Answer: Carbohydrates :- It is an organic compounds that consists of carbon, Hydrogen, and Oxygen atoms. It is one of the three macronutrients along with proteins and fats, that provide energy to the body. It provides 3.9 calories per gram of energy. The empirical formula is  $C_n(H_2O)_n$ .

Classification : 3 classes

① Monosaccharide : It is simplest form of carbohydrates and include

Glucose, Fructose, Galactose etc  
Formula is  $C_n(H_2O)_n$ .

(2) Disaccharides : Di means two, saccharides stands for sugar. So, it is formed from two monosaccharides  
example : Sucrose (glucose + Fructose),  
lactose (Galucose + Galactose).  
Formula is  $C_n(H_2O)_{n-1}$ .

(3) Polysaccharides : Complex carbohydrates made up of long chain of monosaccharides  
examples are Starch, Glycogen, Cellulose etc.

Q. No. 2 C

C. Answer : Water Pollution.

It refers to the contamination of water bodies such as rivers, lakes, oceans, and groundwater. Water is polluted from both point and non-point sources.

Types of Water Pollution : It has several types

(1) Chemical Pollution :- It occurs when harmful chemicals, such as industrial waste, pesticides, and fertilizers, are released into water bodies. These chemicals are detrimental for aquatic life and can also contaminate drinking water sources.

(2) Biological Pollution: The presence of harmful microorganisms, such as Bacteria, viruses, and parasites. It leads to waterborne diseases and is a threat to human health.

(3) Physical Pollution: The presence of physical objects in water bodies, such as plastic debris, trash, and sediments. It harm marine life that is both plants and animals in water bodies.

(4) Surface Water Pollution

(5) Ground Water Pollution

Causes of Water Pollution :-  
Are as follows

(1) Industrial activities

(2) Agricultural Runoff

(3) Improper waste disposal

(4) Sewage Discharge

(5) Oil Spills

(6) Urban Development

(7) Septic Tanks

(8) Marine Dumping

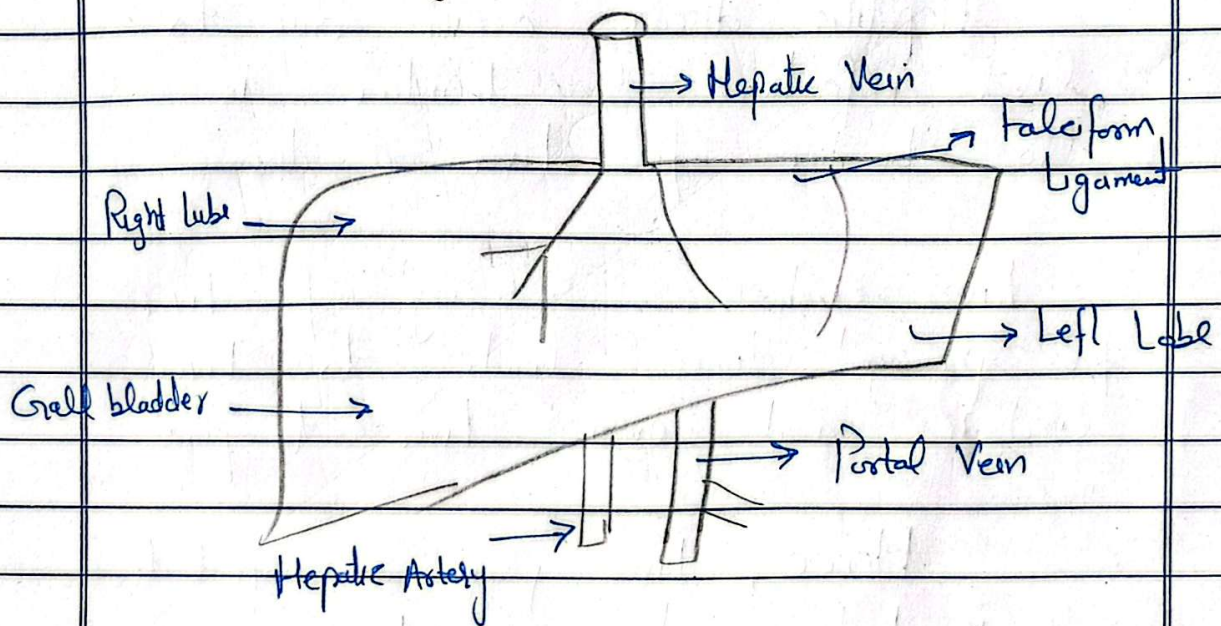
(9) Underground Storage and tube leakage

All these activities leads to water pollution and causes environmental and health risks.

Q. No. 2 d.

Answer: Liver is a chief chemist of the body. Liver is the 2nd largest organ of the body after skin and is the most heaviest organ of the body. It weights about 1.4 Kilogram.

Liver Diagramme:



Function of Human Liver:- It

helps in

(1) Detoxification :- Removing of unwanted hazardous substance from the body

(2) Metabolism: Sum of all reaction occurring inside the body. Liver plays important role in it.

(3) Hormone regulation

(4) Digestion

(5) Produces Bile : It provides Bile with the digested food to remove out from body through in form of faeces

(6) Store Nutrient : Important nutrient that is required by body for important functions are stored inside it .

Hepatitis disease occur due to liver infection : Jaundice is also because of liver disease .

Liver Cirrhosis : Scarring of liver for prolonged times leads to liver Cirrhosis and even liver transplant .

Hence, liver plays an important role in body and is known as chief chemist of the body as it helps in the protection, immunity, and regulation of the human body .

Q. No. 3 a.

a. Answer : Role of kidney in the urine formation :

Kidney is a dark red, bean shaped organ, weights about 270 grams .

It plays an important role in urine formation. Nephron is the structural and functional unit of kidney, which regulate and maintain the formation of urine. Nephron acts to filter, reabsorb and screen out carbohydrates and salts. The Bowman's capsule filtered the fluid. and Proximal convoluted tubule reabsorbed essential substances from fluid and get transported back to the blood. The loop of Henle concentrates the salts which are added to urine for excretion. Here, important nutrients are reabsorbed and then Distal convoluted tubule acts to maintain pH of both blood and urine. After this, the fluid flow into collecting duct and excrete through followed by bladder and Ureter by a process called Ultrafiltration. This is how kidney plays an important role in the urine formation.

Q. No. 3 b

b. Answer: Remote Sensing:

The process of getting information about far away earth feature without being in contact is called Remote Sensing. It is done by sensing and recording reflected energy by processing,

analyzing, and applying all that information

## Types of Remote Sensing:

- ① Passive Remote Sensing - It is done through Sun
- ② Active Remote Sensing - It occurs through the help of satellite directly

## Role / application in Environmental Science: Are as follows

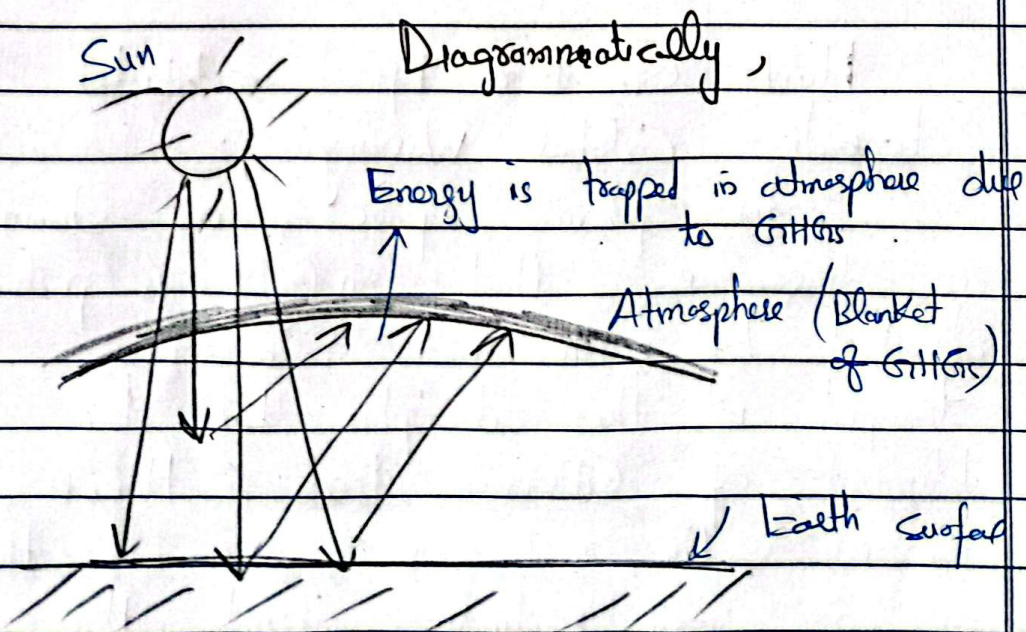
- ① A valuable tool in monitoring environmental conditions
- ② Helps in Urban Planning - How to plan construction societies, roads, routes, settlements etc
- ③ Disaster management assessment
- ④ Instrumental in land use mapping
- ⑤ Information about the cover of forests
- ⑥ Information about the Oceans and Coastal Zones :- Identification of potential area of fish concentration
- ⑦ Helps in Geological Maps.



Q.No. 3 C

C. Answer: Green House Effect:

When Sunlight enter earth atmosphere, So some of its rays are absorbed by the earth and some are reflected back into atmosphere. But certain Green House gases such as  $CO_2$ ,  $SO_2$ ,  $CH_4$ , absorb this energy and form a blanket in atmosphere by trapping all energy in the atmosphere and does not reflected back energy into the space, such effect is called as Greenhouse effect. The enhanced Greenhouse effect is leads to global warming, that is increase in the global mean temperature. Since, industrial revolution, greenhouse effect and global warming enhanced which led to climate change.



## Benefits of Greenhouse effect :

Are as follows

- (1) Increase in Earth temperature
- (2) Trapping of Sun-energy in atmosphere
- (3) Prevents earth from ultraviolet rays by helping ozone

(4) However, its causes more harm than its benefits such as

(1) Ozone depletion

(2) Global Warming

(3) Climate change

(4) Increase in Average Earth temperature -

## How Greenhouse Effect contributes towards Global Warming :

In previous page, as shown in diagramme, that sunlight is partially absorbed by earth and some are trapped in the atmosphere by the blanket of GHGs there. Hence, incoming solar radiations overcomes the outgoing solar radiations and thus it contributes to global warming.

G.No. 3 d.

d. Answer : Food Preservation Methods :

The number of methods through which food is kept from spoilage after harvest or slaughter. Some oldest methods are Drying, refrigeration and fermentation.

It can be describe as following

- (1) Heat : Most bacteria and other microorganisms killed in the range of high temperature e.g Boiling
- (2) Cold : With decreased temperature, most microbial activities stopped e.g Freezing, refrigeration.
- (3) Drying : Removing a excess water from food inhibit bacterial growth
- (4) Acid : Microorganisms are sensitive to acid
- (5) Sugar and Salt — Prevents the growth of microorganism
- (6) Smoke :- Associated heat kills microorganisms
- (7) chemicals : It kills or inhibit growth of microorganisms - e.g Sodium Benzoate, Ethyle formate.

(8) Radiation — such X-rays, microwaves — It ionizes microorganisms and prevent food spoilage

(9) Food Packing : It prevents food from physical damage

(10) Food Additives :- It is added to food during processing or storage

Types :- Are as follows

- Antioxidants :- It prevents oxidation and formation of free radicals.

- Flavoring agents — To give the required flavors

- Preservatives → Added for quality preservation

- Colouring agents

- Stabilizers → It is added to prevent an unwanted alteration of physical state.

Hence, all these above mentioned methods are known as food preservation methods.

Section : B .

Q. No. 6

a. Answer:

Five years ago, age of father was three that of age of his son .

So, If son is 30 years old now .

5 years before son age will be  $30 - 5 = 25$  years

- Father age will be  $25 \times 3 = 75$  years

- So, Current age of son is 30 years ,

Hence, Current age of father is 80 years .

Q. No. 6

b. Answer:

10% income tax is 1500

So, total income =  $1500 \times 10$

Total income = 15000

Q. No. 6

C. Answer:

Arithmetic mean of a list of 6 numbers is 20.

$\Rightarrow$  Removing one number, average is 15 (remaining).

$$\text{So, } \Rightarrow x+x+x+x+x = 15$$

$$= 5x = 15$$

$$\Rightarrow \boxed{x = 3}$$

$$3 \times 5 = 15$$

$$\text{Now, } 20 - 15 = \boxed{5}$$

Hence, the number that was removed is 5.

Q. No. 6 d.

d. Answer: Find missing one

(i) 8, 4, 32, 7, 5, 35

$$\text{As, } 8 \times 4 = 32$$

$$7 \times 5 = 35$$

(ii) 17, 19, 23, 29, 31, 37

As,

$$17 \rightarrow 19 = 2$$

$$19 \rightarrow 23 = 4$$

$$23 \rightarrow 29 = 6, \quad 29 \rightarrow 31 = 2$$

$$31 \rightarrow 37 = 6$$

Q. No. 7.

a. Answer: Diameter of round table = 7 meters.

Distance of walk = ?

As we know that,

Circumference of Round table = C = 2πr.

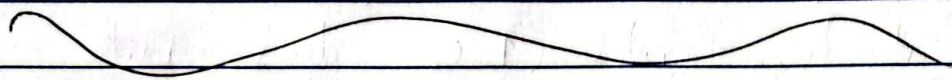
r = D/2 = 7/2 = 3.5 m.

C = 2πr = 2(3.14)(3.5)

C = 7(3.14)

3.14  
7  
-----  
21.98

C = 21.98 m Answer



Q. No. 7

b. Answer:

18 boys who are over 160 cm tall

18 = x \* 3/4

x = (18 \* 3) / 4

x = (18 \* 4) / 3 = 24

where x = 24 total number of boys in class

Total number of boys is 2/3 x = 24

Total number of students = X = (24 \* 2) / 3 = 36 (Total number of student)

So, Number of Girls = 36 \* 1/3

Number of Girls = 12 Answer!

Q. No. 7.

C. Answer:

I.Q stands for Intelligence Quotient.

$$I.Q = \frac{\text{Mental age}}{\text{chronological age}} \times 100$$

E.Q = stands for emotional Quotient. It is the ability that helps people to perceive, express, understand, and regulate emotions.

⇒ I.Q deals with mental abilities while E.Q deals with socio-emotional abilities.

Factors which affect I.Q :

(1) Hereditary influence

(2) Environmental influences

(3) Race and nationality - There is a discrepancy between whites and minorities in USA.

(4) Sex and intelligence : Women are good at memory while men are good at Mathematical skills.

(5) Age : Good intelligence is between 20 - 30 years age.



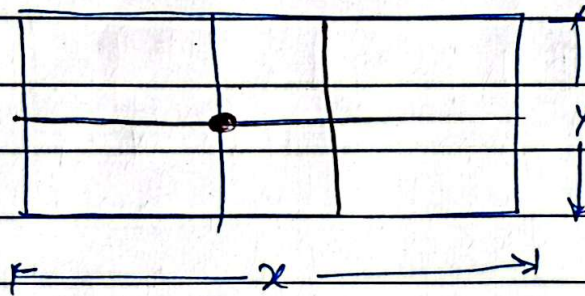
⑥ Health and physical development

⑦ Social and Economic conditions

⑧ Study and creativity (→ affect of creative works)

Q. No. 7. d.

d. Answer:



$$x + y = 240 \text{ cm}$$

$$x = 3y$$

$$x = 180 \text{ cm}$$

$$y = 60 \text{ cm}$$

$$\text{Perimeter} = 2(x + y) = 2(240)$$

$$\text{Perimeter} = \boxed{480 \text{ cm}} \text{ Answer}$$