Day: Thursday

Date: 23-01-2025

TEST-05

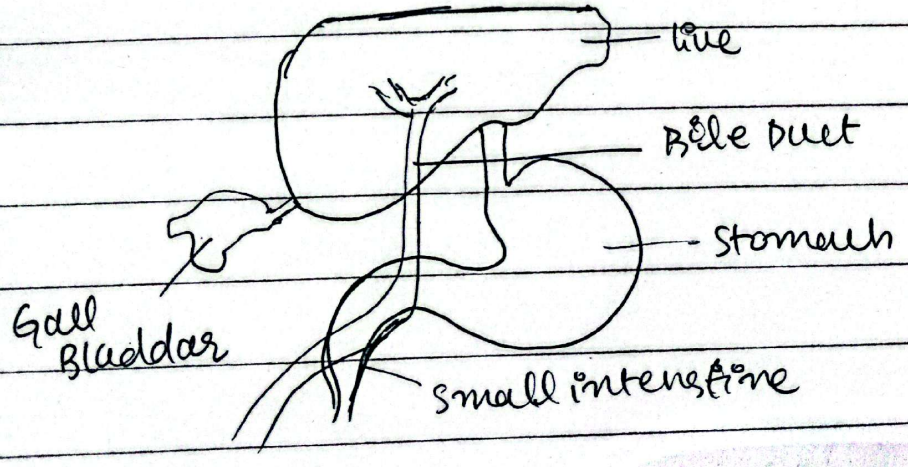
(SECTION-I)

Q NO 4:

(a)

Liver:

It is a abdominal glandular organ in the digestive system. It is the second largest organ in body after skin. Its weight is around three pounds. It has several ducts that generates bile juice and digest food.



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Bile Juice Composition:

It is composed of four components

(i) Bile Pigments
(ii) Bile Salts
(iii) Cholesterol
(iv) Electrolytes

(i) Bile Salts:

It is composed of water attracting and water repeling structure. It emplisfy fat and converts it in small droplets and increase their surface area to enhance the efficiency of enzymes.

(ii) Bile Pigments:

It is the waste products that are released in the process of the breakdown of the fats. It gives color of brown to feces.

(iii) Cholesterol:

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It is necessary for the formation of the bile salts.

(iv) Electrolytes:

It maintains the pH level of the acid released in the stomach for the breakdown of fats in order to protect the small intestine from getting damage.

Functions of Bile Juice:

(i) Emulsification of fats:

Bile juice emulsifies the fats by breaking them down in small droplets.

(ii) Digestion and Absorption:

Bile juice further break down the food in the small intestine with pancreatic juice and absorbs the necessary nutrients.

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(iii) **Neutralisation :**

Bile juice neutralises the acidic chyme entering in small intenstine from the stomach.

(iv) **Elimination of waste:**

Bile juice plays an important role in eliminating wastes from humen body along with bile pigment that gives color to the feceses.

(b)

Kidneys :

Kidneys are located below the abdomen under the diaphram and are protected by the last two ribs. Kidneys are beam shaped that are 10cm long and 5cm in width. It has weight of 27g. Nephron is the fundamental unit of kidney.

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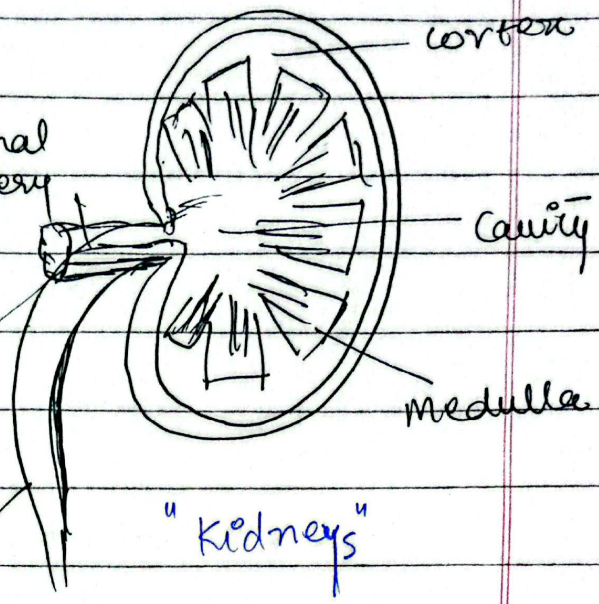
Components of Kidneys:

The kidneys are consisted of

(i) Renel Artery
(ii) Renal vein
(iii) Cortex
(iv) Medulla
(v) Ureter
(vi) Nephron



"Kidneys"

Role of Kidneys in Excretion:

Kidneys plays an important role in excretion through absorption, filteration, and secretion.

(i) Filteration of Blood:

Blood enters in the kidneys via renal artery and kidneys filters the waste products from the kidneys with the help of nephrons.

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(ii) Formation of Urine:

Kidneys play an important role in the formation of urine through

(i) Filteration
(ii) Reabsorption
(iii) Secretion

→ Filteration is the process in which kidney filters the blood.
→ Kidney reabsorbs the nutrients that are essential for body
→ Waste products then secreted from the body via ureter in the form of urine.

(iii) Nitrogenous Waste Removed:

Kidney filters the blood and remove nitrogenous waste products from the blood and excrete it with urine from the body.

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(c)

Methods of Solid Waste Management:

SWM is a way to dispose off solid wastes that includes industrial and sanitary wastes. The waste consists of hazardous, non-Hazardous, organic and biodegradeable wastes.

Methods:

There are several methods to dispose of solid waste. Some of them are given below.

(i) Recycling
(ii) Composting
(iii) Landfilling
(iv) Incarceration

(i) Recycling:

It is the process in which solid wastes are recycled

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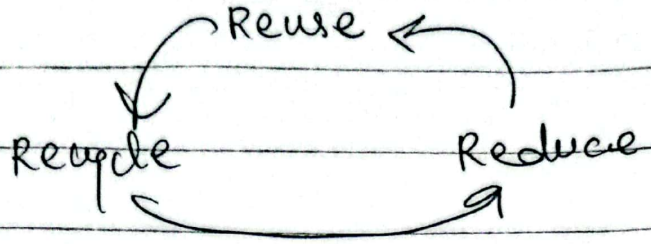
for the purpose of reusing.



- The solid waste is converted in new products.
- Solid waste is reprocessed in order for the reuse.
- It is converted into paper, plastic and other materials.

(ii) Composting:

It is another way to dispose off the solid wastes.

- It is often use for the organic wastes
- The organic wastes are decomposed.
- The decomposed wastes give nutrient rich soil.

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(iii) Landfilling:

In pakistan, landfilling method is used to decomposed the solid waste.

- The solid waste are buried in an area.
- The area is decided while considering the location surrounding people.
- The waste men covered with soil and other material to prevent the bad odor.

(iv) Incineration:

It is another method employed in pakistan from getting rid of the solid waste.

- It includes the burning of solid waste.
- It involves the high temperature for the rapid burning of waste.

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(iii) The waste converted in ashes, heat, and gases.

(d)

Define the terms

(i) **Anaemia:**

It is defined as the deficiency of Red blood cells and haemoglobin in the blood. It causes nausea and shortness of breath.

(ii) **Appendicitis:**

It is known as the inflammation of the finger like structure attached to the large ~~abdo~~ intestine, known as the appendix. It causes the severe pain and it is necessary to remove it surgically.

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(iii) Spleen:

It is known as a organ located above the stomach in the abdomen. It breaks down the Red blood cells and it is called the graveyard of the RBCs.

(iv) Myopia:

It is an eye disease that is known as the short sightedness. In this disease, an individual is unable to see the distant objects and can see close objects easily.

(v) Isotones:

It is known as the atoms having same number of protons and different number of neutrons. Carbon 16 is an exemple of isotones.

Q NO2:

(a)

AI is the New Electricity:

"AI is the new electricity"

Andrew

It is said by Andrew that "AI is the new electricity". Andrew explains that the way electricity transforms the world through Industrial revolution in the way AI will transform every way of life.

What is AI?

It is the term coined by John Mccarthy in 1956. AI is known as the development of machines that are capable of performing tasks that required human intelligence.

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Transformation Bought by AI:

(i) Cognitive Processing:

AI stimulates the cognitive processing and promotes efficiency, accuracy, and automation. It is capable of learning, processing, reasoning, and problem solving.

(ii) Natural Language Processing:

AI is capable of the natural language processing. It can understand human language that other machines were not capable of doing. One example of it is ChatGPT.

(iii) Robotics:

AI is transforming the world with the field of robotics. The robots are capable of performing tasks

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that requires human effort and processing.

(iv) Transformational Impact:

AI is transforming every field of life ranging from education to healthcare.

- Enhanced productivity
- Automation
- Accuracy and Efficiency

(b)

CPU:

It is a central processing unit. It consists of small micro-processing chip made of silicon. It is able to control all the tasks in computer the way brain control all bodily actions in human beings and animals.

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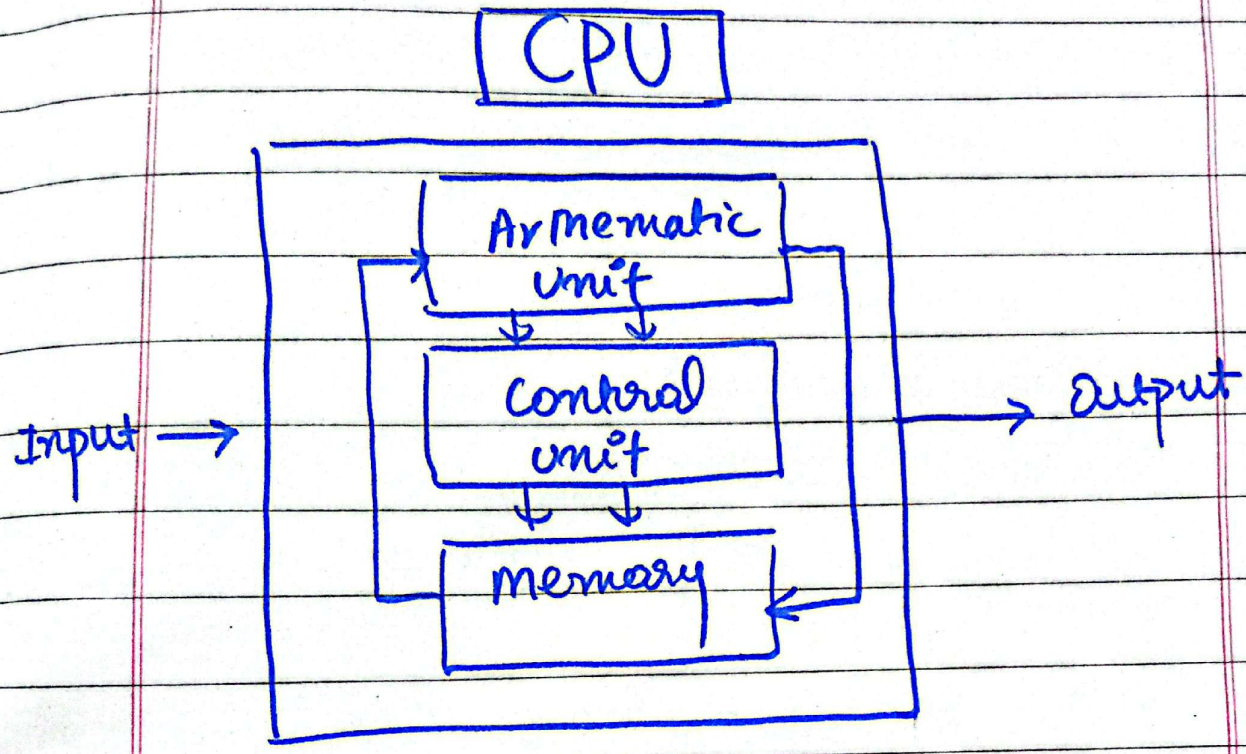
Components of CPU:

CPU consists of arithmatic and control unit that regulates the functions of the computer.



(a) Arithmatic Unit:

- The arithmatic unit performs all the calculation that are required to perform on the data. It includes addition, substraction, division, and multiplication.

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- It performs the logical functions that required sorting the data.

(ii) Control unit:

- It controls all the activities or tasks that took place in a computer.
- It coordinates all the components of the computer.
- It sync the input and output tasks
- It regulates the signals for the scheduling activities.

(C) Balanced Diet:

"A balanced diet is defined a diet with complete nutrional value that is required for the proper functioning of the body".

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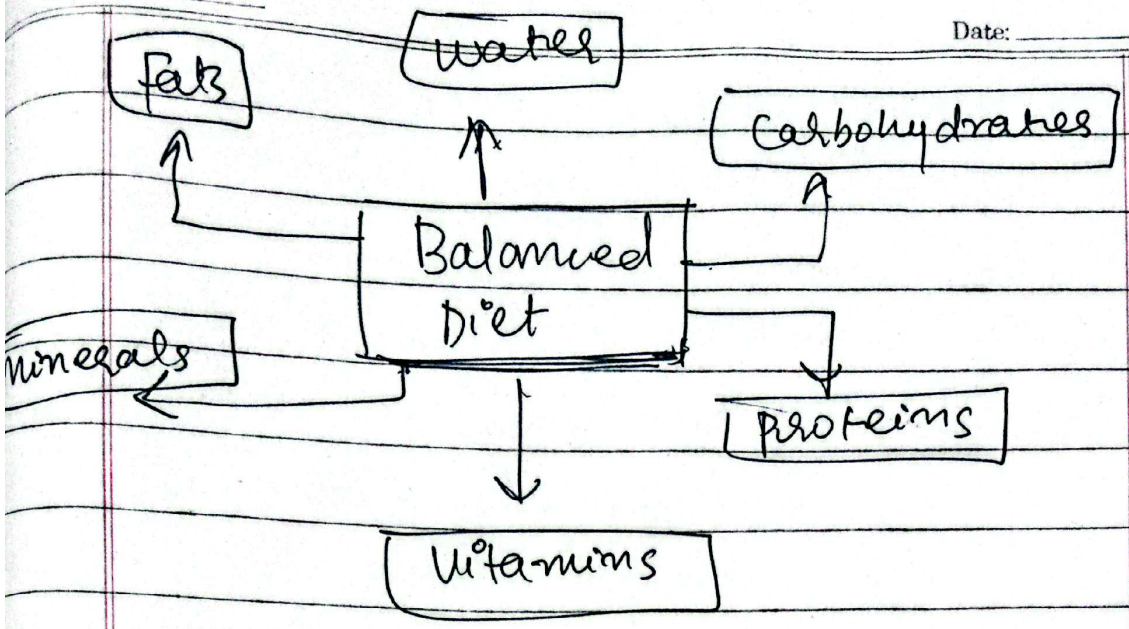

Composition of Calories

A balanced diet has accurate amount of calories that is required for the proper function of the body.

Carbohydrates	60-80%
Proteins	20-40%
Fats	10-20%

Source: WHO

Characteristics of Balanced Diet:

(i) Balanced diet contains carbohydrates that provides

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instant energy for the body.

(ii) It contains proteins that is necessary for the muscle growth.

(iii) It contains vitamins and minerals that are required for metabolic activities.

(iv) It contains water that fulfil the hydration needs of the body.

(v) It contain fats essential for the proper functioning of the body.

Imbalance in human body due to deficiency of Vitamin A, B, C:

The deficiency of these vitamins results in number of imbalances but most common are given below.

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Vitamin A	Short sightedness permanent vision loss
Vitamin B	Beri Beri disease
Vitamin C	Scurvy, damage of skin & bones

(d)

Working of Optical Fibers :

Optical fibers works on the principle of total internal reflection.

- Light enters the optical fiber from the light source.
- It is reflected by core and cladding helps in continuous bending of light.
- When light reaches the end of fiber it is changed in electrical signals.

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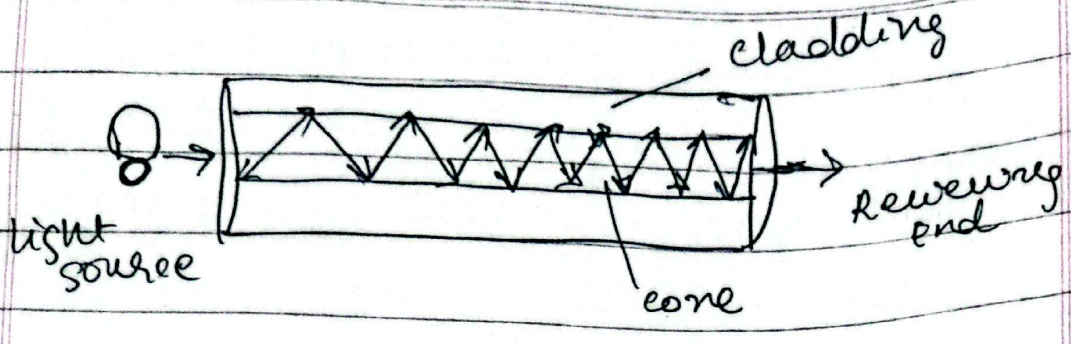
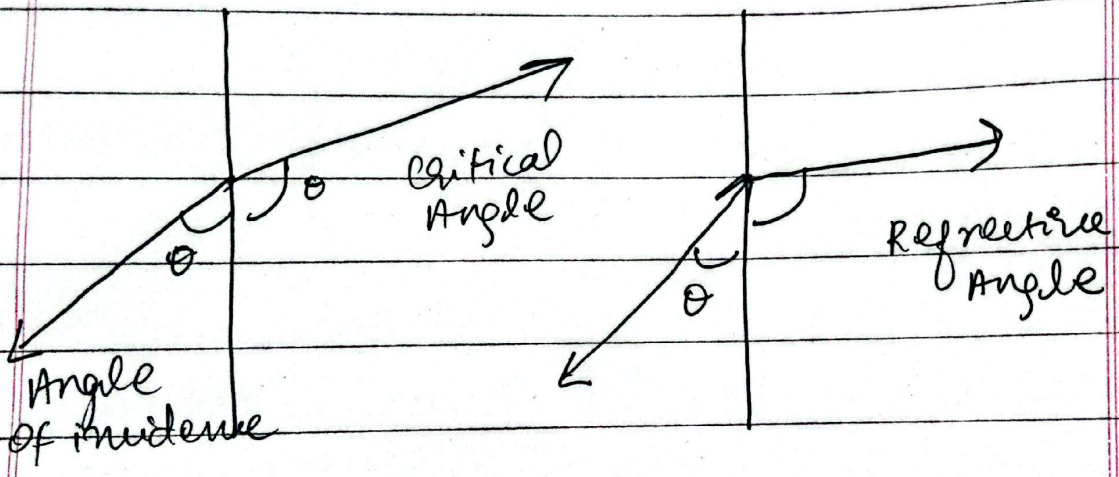
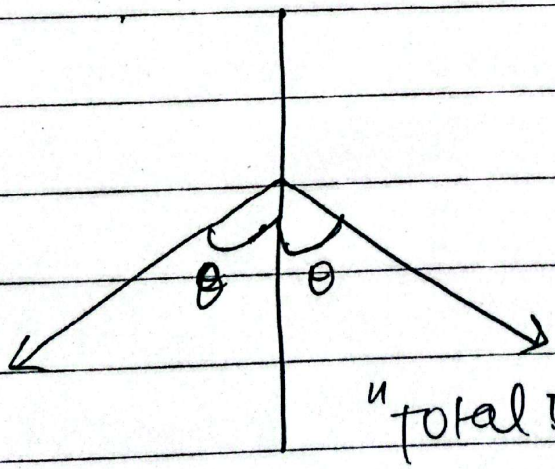


- The refractive index of core is greater than the cladding.
- The angle of incidence is greater than angle of critical.





"total internal reflection"

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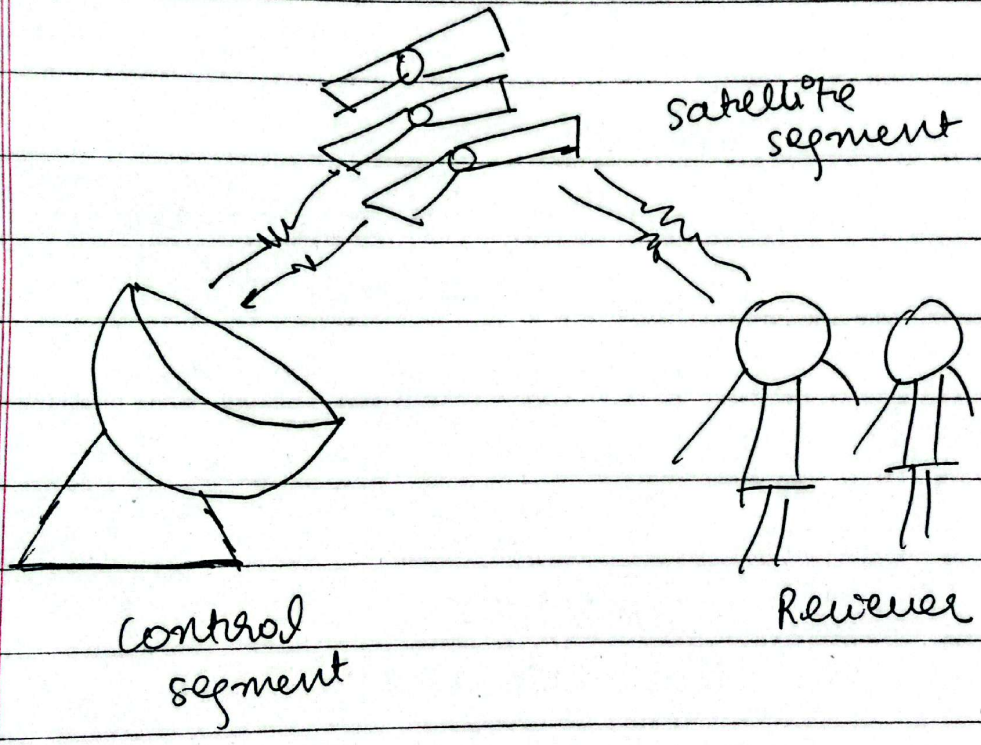
GPS:

It is known as the Global positioning system. It is a satellite based navigation system that determines the exact location of a process with the help of satellite. It provides exact time, velocity, and location with respect to earth.



Location Measurement by Satellite :

The 3D and 2D location are measured by the satellite with the help of "trialteration or

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triangulation process. The satellite transmits signals that are capture by the cellular phones of the individuals

(i) The time a signal took from reaching to a individual from a satellite.

(ii) The receiver calculates its latitude, altitude, and longitude.

(iii) The control station connects in 2D and 3D location via map for the navigation process.