

Q.no-4

(a)

What is Role of Carbohydrates, vitamins in body.

Role of Carbohydrates in body:

Carbohydrates:

They are polyhydroxy aldehydes or ketones which on hydrolysis yield polyhydroxy aldehydes or ketone subunits.

Example: Glucose, Fructose

Role of Carbohydrates in body:

a) Energy Source: Carbohydrates act as fuel for body. They provide energy to body. **Brain** uses carbohydrates as energy sources. Glucose units break down and give energy in form of **ATP**.

b) Prevent against diseases:

Whole grains help lower risk of heart disease and stroke. Fiber may also help protect against obesity, colon and rectal cancer.

c) Ample fuel for heart, kidneys:

Glucose as instant source of energy work as better fuel for heart, kidneys and brain than proteins and lipids.

d) Glycoprotein - cell recognition:

With proteins, carbohydrates form glycoprotein which help in recognition of other cell as familiar cell or foreign. This is called cell to cell recognition.

e) Blood sugar:

In blood, carbohydrates act as blood sugar which insulin provides to cell for energy.

Role of vitamins in body:

Vitamins:

They are organic molecules that are essential to an organism in small quantities for proper metabolic functions.

Examples:

Vitamin A, vitamin B

Role:

i. Role of fat soluble Vitamins:

1. Role of Vitamin A:

It improves eyesight, skin, muscles and mucous membranes in body.

2. Role of Vitamin D:

It helps in growth of bone tissue, it assists in calcium and phosphate metabolism.

3. Role of Vitamin E:

Mostly it acts as an antioxidant in body and also provides defense to diseases.

4. Role of Vitamin K:

It has a key role in blood clotting and assists in synthesis of protein important in bone mineralization.

Role of water soluble vitamins:

1. Role of Vitamin B:

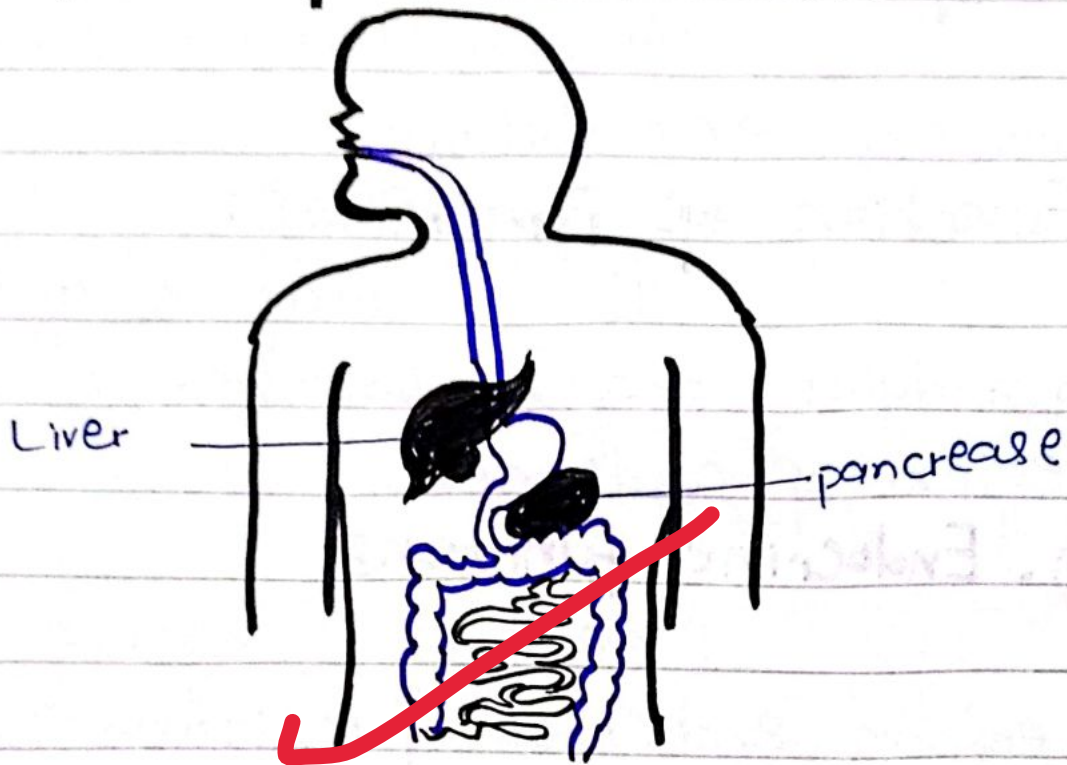
They help in formation of red blood cells and their functioning.

2. Role of Vitamin C:

It is needed for biosynthesis of collagen and growth tissues in body.

(↓)
Discuss functioning of liver and Pancrease

(a) Function of Liver:



Liver is largest organ in body. It performs following functions:

i. **Detoxification:**

It does 'detoxification' of many chemicals like Ammonia.

ii. **Storage:**

It store glucose in glycogen form.

iii. **Bile production:**

It produces bile which is fat digesting enzyme.

iv. **Metabolism:**

It does metabolism of

protein, lipids and carbohydrates
by conversion of lactic acid to glycogen
v. Synthesis:

It does synthesis of nitrogenous
wastes and cholesterol etc.

(b) Function of Pancreas:

It is leaf shaped
glandular organ located in epigastric
region of abdomen.

a). Endocrine functions:

Islets of Langerhans
perform endocrine functions. They
contain hormone producing cells.

i. Alpha Cells:

They are associated with
insulin production, thus maintain
blood sugar level by suppressing glucose
level.

ii. Beta cells

They produce glucagon
which increase blood sugar level.

b) Exocrine functions:

Externally, major role
of pancreas is in digestive system.

i. Digestive Enzymes:

It produces digestive enzymes
For example;

(a) Amylase: catalyze digestion of carbohydrates

(b) Lipase: It assist in digestion of fats.

(c) Proteases: Proteases like trypsin and chymotrypsin are for digestion of proteins.

ii. Bicarbonates:

It secret bicarbonates in small intestine to neutralize acidic chyme

(c)

What are standards of drinking water? How heavy metals in water affect living organisms?

Standards of drinking water Definition:

They are guidelines to ensure quality of water intended for human consumption. They are set by international organizations like WHO (World Health Organization).

Parameters	Parameter Name	Limit
Microbial Parameter	Escherichia Coli (E. coli)	100/mL
	Enterococci	100/mL
Chemical Parameter	Arsenic	$\leq 0.02 \text{ mg/L}$
	Lead	$\leq 0.1 \text{ mg/L}$
	Nitrate	$\leq 50 \text{ mg/L}$
	Fluoride	$\leq 1.5 \text{ mg/L}$
Physical Parameter	pH	Typically, between 6.5-8.5
	Turbidity	$\leq 1 \text{ NTU}$ Nephelometric Turbidity Units

Heavy Metals
Mercury
Cadmium

(b) Heavy metals in water and their effects on living organisms:

Heavy metals in water have following impact on living organisms

Heavy Metals	Effect of Heavy metals on living organisms
Mercury (Hg)	It causes renal damage, affect fish and effects on fetus development.
Cadmium (Cd)	It causes kidney damage, skeletal muscle damage and lung cancer in human beings.
Arsenic (As)	It causes skin lesions in humans and can be toxic to aquatic organisms.
Chromium (Cr)	It causes respiratory issues, reduce reproduction and lung cancer.
Lead (Pb)	It causes neurological damage in humans. It also causes hypertension.

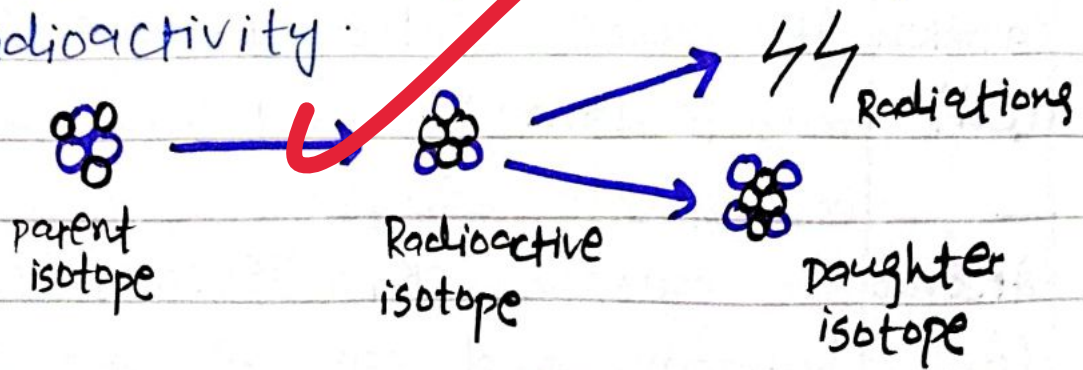
(d)

What is radioactivity. Discuss laws of radioactivity. Name 2 radioactive elements.

Radioactivity:

It is phenomenon in which unstable nuclei of certain

elements emit electromagnetic radiations: alpha, beta or gamma rays, in a process to attain a stable condition, measured in Curie or Rutherford units of radioactivity.



Discovered by:

Henri Becquerel in 1896

Laws of Radioactivity:

1. Radioactivity is result of decay of nucleus.
2. Nucleus's decay rate is independent of Temperature and Pressure.
3. Radioactivity depend on law of conservation of charge.
4. Physical and chemical properties of daughter nucleus different from mother Nucleus.
5. Radioactivity decay law: Probability per unit time that a nucleus will

3.5
decay is a constant, independent of time

Names of 2 radioactive elements

- i - Uranium (U)
- ii - Thorium (Th)

Good answers and structure