

PART - II

Section - I

Q2 → a) Define the term malnutrition, elaborate its major causes and consequences.

Ans → Definition

Malnutrition refers to a condition that occurs when a person's diet does not provide enough nutrients or the right amount of nutrients for optimal health.

It includes both;

- Undernutrition (not getting enough nutrients).
- Overnutrition (getting too many, often unhealthy nutrients).

Causes

① Poverty → lack of access to sufficient and healthy food.

② Poor diet → Imbalanced meal meals lacking essentials vitamins, minerals and proteins.

③ Diseases and infections → Conditions like diarrhoea, HIV/AIDS, tuberculosis, etc can interfere with nutrient absorption.

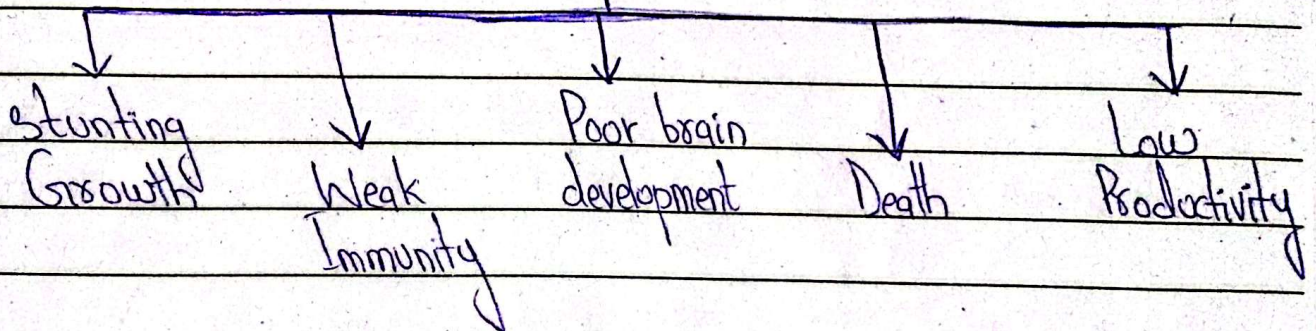
④ Lack of awareness → poor knowledge of nutrient and healthy eating habits.

⑤ Food Insecurity → limited or uncertain access to adequate food.

There may be certain other reasons too that leads to malnutrition.

Consequences

Consequences of Malnutrition



→ Stunted growth Can be a consequence of malnutrition. Children may not grow their heights due to long-term malnutrition.

→ Weak immune system Can be a severe consequence leading to other diseases.

→ Malnutrition may affects brain development and learning ability.

→ There can be high mortality rate particularly in infants and children.

(b) Differentiate between food Contamination and adulteration.

The difference between food Contamination and adulteration is discussed below;

① As To Definition

→ Food Contamination means the unintentional presence of harmful or unwanted substances in food like; bacteria, viruses, chemicals etc, which makes it unsafe to consume.

→ Food adulteration is an act of intentionally debasing the quality of food being sold either by means of mixing, substituting or removing any of the ingredient.

② As To the Types

→ Food Contamination can be divided into;

- (i) Biological Contamination.
- (ii) Physical Contamination.
- (iii) Chemical Contamination.
- (iv) Cross Contamination.

- Following can be adulterants ;
- (i) Poisons or deleterious substances
 - (ii) filth and foreign bodies
 - (iii) Economic adulteration
 - (iv) Microbiological adulteration
 - ~~(v) Intentional~~

③ As To The Causes

→ The reasons of food Contamination Can be;

- Poor hygiene
- Improper Storage
- Dirty utensils
- Unclean water
- Use of pesticides and fertilizers
- Mixing raw and cooked food.

→ The Causes of food adulteration might be;

- Demand is higher than supply.
- Greed for increased profit margins.
- The Common man can not afford ^{original} food items.

④ As To Consequences

→ The Consequences of Contamination are food poisoning, Diarrhea, vomiting, dehydration, even death in some Cases.

→ food adulteration, surely, leads to following consequences;

- health problems (food poisoning, weak immune system, reproductive issues, etc).
- Long Term effects (chronic illnesses, stunted growth, etc).
- Legal and Social Impacts (sellers may face legal penalties, loss of consumer trust, damage to the brand).
- Economic Consequences (loss of productivity, wastage of resources due to spoiled food).

⑤ As To Examples

→ Examples of Contamination are Salmonella & E. coli, pesticides on fruits or vegetables, industrial waste mixing with rivers, lakes, etc.

→ examples of food adulteration are;
water or starch mixed with milk, Sugar Syrup mixed into honey, Artificial Colors mixed with Spices, etc.

(c) What are Computer Buses?
Differentiate between RAM and ROM?

COMPUTER BUSES

Computer Buses are communication pathways that transfer data between different components of a computer. Its main purpose is to transfer data, addresses and control signals between different parts of a computer system to ensure smooth and organized communication among all internal components of computer system.

RAM

1 → RAM (Random access memory) can be defined as a temporary memory that can hold the data and instructions if there is an adequate power supply. (Volatile)

2 → The content in RAM can be accessed and processed.

ROM

ROM (Read only memory) can be defined as permanent memory holding the memory even if the power is switched off. (Non-Volatile)

The content in ROM can not be accessed. It can be only read.

RAM

ROM

3 → It has a high-Speed at a higher Cost than ROM.

It has a low-Speed at a lower Cost than RAM.

4 → It is used by CPU to run programs.

It is used to boot the Computer (BIOS).

Q(d) What are Geo-Stationary Satellites?
Distinguish natural and artificial Satellites,
how many artificial Satellites of Jupiter are there?

→ GEO-STATIONARY SATELLITES :

Geo-Stationary Satellites are artificial Satellites that orbit the earth at the same rotational speed as the earth, remaining fixed over one point on the equator. They are used for telecommunication, weather forecasting and broadcasting.

→ Differentiate between natural and artificial Satellite ;

→ A natural Satellite or moon is a natural Celestial body that orbits a planet or dwarf

planet or minor planets.

→ Artificial Satellite is a semi independent computer controlled system placed by humans in an orbit, for different purposes.

→ Jupiter, the largest planet, has no artificial permanent satellites launched by humans that are currently orbiting around it. However, a few space probes have orbited around Jupiter:

- Galileo (orbited from 1995 to 2003)
- Juno (orbiting since 2016.)

So Jupiter has no artificial satellites like earth, but only temporary research missions.

Q4

(a) differentiate between temperate and tropical cyclones.

Tropical cyclones are formed in tropical regions (5-30° latitude), over warm oceans, having energy sources from warm ocean water and moisture, usually being smaller in size (100-1000 km in diameter), moving slowly, occurring mostly in summer and autumn. Its examples are hurricanes, typhoons, etc.

3 → Temperate Cyclones are formed in mid-altitudes (30-60° latitude), at the junction of warm and cold air masses, usually larger in size (1000-3000 km in diameter), moving faster and occurring commonly in winters. Its examples are western disturbances, Nor'easters.

(b) Differentiate star and planet. How a star becomes a black hole?

→ Star emits its own light and heat. It is made up of hot gases. ex → Sun.

→ Planets do not emit light, they reflect stars light. They are made of solid, liquid or gases. ex → earth, mars.

→ A very massive star burns all its fuel and then explodes in supernova. After the explosion, its core collapses under its own gravity. If the core is heavy enough, it becomes a black hole (a point with strong gravity where nothing can escape).

Section - II

Q6 (a) The sum of three consecutive prime numbers is 159, find the numbers.

Solution

→ If 3 numbers add upto 159, their average would be :

$$\frac{159}{3} = 53$$

So one number is 53.

→ Now checking prime numbers around 53, which are

47 and 59.

So the three consecutive prime numbers are

53, 47 and 59.

(b) The perimeter of a circle having a radius of 6cm is equal to ?

Solution

Formula : $2\pi r$

where ,

$$r = 6 \text{ cm}$$

$$\pi = 3.14$$

Substituting the values;

$$\text{Circumference} = 2 \times 3.14 \times 6 = 37.699$$

So, the perimeter of circle is approximately
is 37.7 cm

Q7 (a) The sum of two numbers is 23 and product is 132. find the numbers.

Solution

let x and y be 2 numbers. So it;

$$x + y = 23 \quad \text{--- (1)}$$

$$x \times y = 132 \quad \text{--- (2)}$$

take eq (1)

$$x + y = 23$$

$$x = 23 - y \quad \text{--- eq (3)}$$

put ~~(2)~~ (3) in (2)

$$\cancel{23 - y} + y = \cancel{23} \quad \text{and} \quad (23 - y) \times y = 132$$

$$23y - y^2 = 132$$

$$y^2 - 23y + 132 = 0$$

using quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a=1, b=-23, c=132$$

$$y = \frac{-(-23) \pm \sqrt{(-23)^2 - 4(1)(132)}}{2(1)}$$

$$y = \frac{+23 \pm \sqrt{529 - 528}}{2}$$

$$y = \frac{23 \pm \sqrt{1}}{2}$$

$$x = \frac{23+1}{2}$$

$$x = \frac{24}{2}$$

$$x = 12$$

$$x = \frac{23-1}{2}$$

$$x = \frac{22}{2}$$

$$x = 11$$

put both in eqn ①

$$12 + y = 23$$

$$y = 23 - 12$$

$$y = 11$$

$$11 + y = 23$$

$$y = 23 - 11$$

$$y = 12$$

So $x = 12, 11$ and $y = 11, 12$
 So the numbers are 12, 11