

PART-II

SECTION-I

Q NO. 2

(a) Lipids

Lipids are naturally occurring organic compounds commonly known as oils and fats. They contribute to cell structure and also take part in many biological processes.

Types:

- The basic unit of lipid is known as a triglyceride. Second most common class is phospholipids. Other types of lipids include steroids and waxes.

- Fats can be classified into saturated and unsaturated.

Functions:-

- Lipids serve as energy reserves for the body.
- ✓ They regulate membrane permeability.
- ✓ They are an important component of cell membranes structure in eukaryotic cell.
- ✓ They act as electrical insulators to the nerve fibres, where myelin sheath contains lipids.
- ✓ Layers of fats provide insulation and protection from cold.

(B) ENERGY CONSERVATION

Some of the measures for energy conservation and its sustainable use are as follows:

- Reduce consumption

Unplug and turn off the electronics and appliances when not in use.

Use Renewable Energy Sources

Use renewable resources for energy, such as solar panels, wind turbines. Reduce the reliance on fossil fuels.

Conserve Water

Do not waste water. Make efficient use of clean water.

Transportation Efficiency

Reduce the use of fuel-based vehicles. Prefer public transportation or fuel-efficient vehicles.

Efficiency and Sustainability

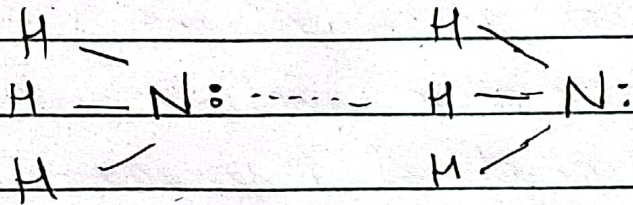
1) Support businesses that provide energy efficiency in the industry and prioritise sustainability

(C) HYDROGEN BONDING

Hydrogen bonding is the strongest type of intermolecular

force. To form a hydrogen bond

- ✓ One molecule of having a hydrogen atom covalently bonded to F, O, or N.
- ✓ second molecule having a F, O or N atom having an available lone pair of electrons



a) NERVOUS SYSTEM OF HUMAN BODY

The nervous system of human body is the center to take decisions and make communication.

It is made up of brain and a spinal cord and nerves. It is a complex network of specialized cells called neurons that transmit signals throughout the body.

Components:

1. **Central Nervous System** or CNS consist of brain and spinal cord. This process and integrate information and send commands.
2. **Peripheral Nervous System** or PNS consists of nerves that connects CNS to the rest of the body. It transmits sensory information to CNS and motor commands from CNS to muscles and glands.

Function: Some of the major functions performed by the Nervous System are as follows:

Sensory Perception: Receives and processes sensory information from environment; sight, sound, touch, taste.

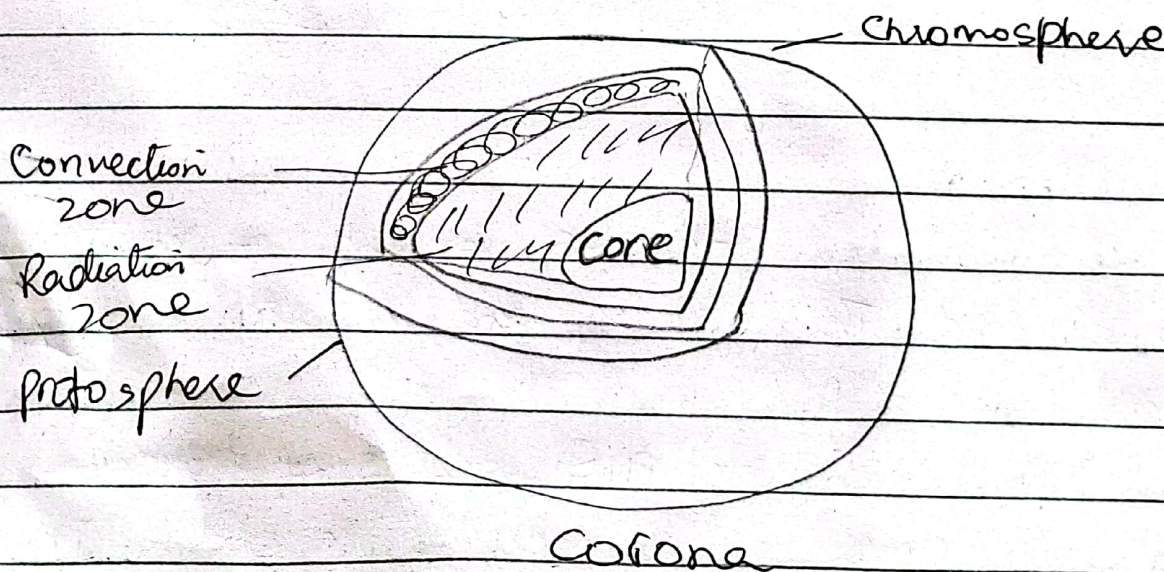
Motor Control: Controls voluntary and involuntary movements such as heart rate, walking, talking etc.

Thoughts & Emotions: Enables cognitive functions such as thinking, learning, and emotional responses.

Homeostasis: Maintain stable internal environment by regulating body temperature, blood pressure and hormones levels.

Q No. 3

(a) Structure of the Sun



The sun is a star, a celestial body, composed of Plasma. Its structure is explained as follows;

Core:- Inner most region where nuclear fusion takes place releasing immense energy.

Radiative Zone: Surrounding the core where the energy is transported outward through radiation.

Convective Zone: The outer most layer of Sun's interior where energy is transported through convection.

Atmosphere:- Further the sun has its atmosphere divided into photosphere (visible surface of sun where sunlight is emitted), chromosphere, and Corona (outermost layer extending millions of km in space)

(b) TSUNAMI

Tsunami are the massive sea waves triggered mainly by undersea earthquakes, volcanic eruptions or landslides. It basically is a deadly disaster.

Causes:- It is generated by a sudden displacement of large amount of water, due to tectonic activity. It reaches up to 30 meters or more in height, with a wave speed upto 800 km/h.

Recent example.

- 2024 California :- Tsunami warnings were issued at the coastal areas after the 7.0 magnitude earthquake
- 2022 Hunga Tonga :- Caused by the eruption of Hunga Tonga volcano, affecting the island of Tonga and the surrounding areas.

(C) ENVIRONMENTAL POLLUTION

E

Environmental pollution is the contamination of the natural environment with harmful substances such as pollutants, chemicals or wastes. It can be in the form of Air pollution, Water pollution, Soil pollution, Noise pollution.

Harmful Effects:-

Environmental pollution can cause health problems such as respiratory illnesses, environmental degradation, destruction of ecosystem, loss of biodiversity, climate change and economic losses such as damage to infrastructure, reduced agriculture productivity and increased healthcare costs.

Measures to curb pollution:-

- 1) Minimize the waste generation, reuse materials and recycle whenever possible
- 2) Shift from fossil fuels to the renewable energy.

Sources:

- 3) Enforce strict environmental laws and regulations for environmental protection
- 4) Educate the public about the importance of environmental protection and disastrous impacts of environmental pollution.

(d) WIRELESS COMMUNICATION AND SATELLITE WORKING

Wireless communication involves the transmission of information without the use of physical wires or cables. It works through the electromagnetic waves to transmit signals over the air.

Working of Satellite

Satellites are launched into the space through rockets. At a certain desired altitude they are placed in an orbit. It maintains the orbit with the balance of its velocity and earth's gravitational pull.

These satellites can be for the purpose of power supply, communication and data transmission, weather monitoring or GPS sat satellites for location and timing information.

SECTION-II

Q.8

(a) Room Dimensions

Given

$$\text{Width} = 60\% \text{ of length}$$

$$\text{length} = 15 \text{ ft}$$

To find

$$\text{room's dimensions} = ?$$

Solution:

$$\text{Width} = 60\% \text{ of length}$$

$$= 60\% (15 \text{ ft})$$

$$= 0.60 (15 \text{ ft}) \text{ or } \frac{60}{100} (15 \text{ ft})$$

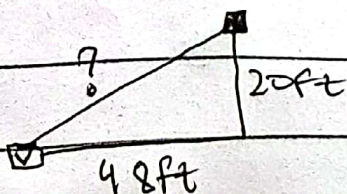
$$= \frac{60}{100} (15 \text{ ft})$$

$$= 9 \text{ ft}$$

Result:-

The dimensions of the room are length 15 ft and width 9 ft

(b) Distance



To find the direct distance we apply pythagoras theorem.

$$\begin{aligned}a^2 &= b^2 + c^2 \\ &= (48)^2 + (20)^2 \\ &= 2304 + 400\end{aligned}$$

$$a^2 = 2704$$

taking square root on both sides

$$a = \sqrt{2704}$$

$$a = 52 \text{ ft}$$

If she ran straight, she would have run 52 ft.

(c) Average marks

Given:

- ✓ avg marks of 40 students = 52.15
- ✓ wrong taken 49 for 85

To find:

corrected average marks

Solution:

$$\begin{aligned}\text{marks of 40 students} &= 52.15 \times 40 \\ &= 2086\end{aligned}$$

$$\begin{aligned}\text{correct marks (total)} &= 2086 - 49 + 85 \\ &= 2122\end{aligned}$$

$$\text{average} = \frac{2122}{40} = 53.05$$

Result:-

The corrected average marks for 40 students are 53.05.

(d) Probability ..

37 people like vegetable pizza

25 like chicken pizza

3 like neither

probability of a random person liking chicken pizza

$$\begin{aligned} \text{Total people} &= 37 + 25 + 3 \\ &= 65 \end{aligned}$$

$$\text{Probability for chicken pizza} = \frac{25}{65}$$

$$= \frac{5}{13}$$

$$= 0.38 \text{ or } 38\%$$

Q: 6

(a) Three digit number

H T U

$$a + b + c = 15$$

$$b + c = 12$$

$$b - c = 2$$

Suppose

$$b = 12 - c$$

$$12 - 5 - c = 2$$

$$12 - 2c = 2$$

$$12 - 2 = 2c$$

$$\frac{10}{2} = c$$

$$\boxed{c = 5}$$

$$b - c = 2$$

$$b - 5 = 2$$

$$b = 2 + 5$$

$$\boxed{b = 7}$$

$$a + b + c = 15$$

$$a + 7 + 5 = 15$$

$$a + 12 = 15$$

$$a = 15 - 12$$

$$\boxed{a = 3}$$

The three digit number is 375

(b) Pizza

Ratio of slices = 2:3:4

Each slice = 90 gm

Price of small (~~2 slice~~) = Rs. 320.

$$\text{Total slices} = 18$$

$$\text{Distribution} = 2x + 3x + 4x$$

$$18 = 2x + 3x + 4x$$

$$18 = 9x$$

$$x = 2$$

$$\text{Small pizzas} = 2 \times 2 = 4$$

$$\text{medium pizzas} = 2 \times 3 = 6$$

$$\text{large pizzas} = 2 \times 4 = 8$$

∴ Total weight :-

$$\text{Small} = 4 \times 40 = 160\text{gm}$$

$$\text{medium} = 6 \times 40 = 240\text{gm}$$

$$\text{large} = 8 \times 40 = 320\text{gm}$$

$$\text{Total weight} = 18 \text{ slices} \times 40\text{gm}$$

$$= 720\text{gm}$$

Price calculation

$$\text{Small} = \text{Rs. } 320$$

$$\text{price for one slice} = \frac{320}{4} = \text{Rs. } 80$$

$$\text{Medium (6 slices)} = 6 \times 80 = \text{Rs. } 480$$

$$\text{Large (8 slices)} = 8 \times 80 = \text{Rs. } 640$$

$$\text{Total price} = 320 + 480 + 640$$

$$= \text{Rs. } 1440$$

(c) CIRCUMFERENCE AND AREA

Diameter of circle = 6cm

Radius of circle = $6/2 = 3\text{cm}$

$$\begin{aligned}\text{Circumference} &= 2\pi r \\ &= 2\pi(3)\end{aligned}$$

$$= 2 \times 6\pi$$

$$= 18.84\text{cm}$$

$$\begin{array}{r} 3.14 \\ \times 6 \\ \hline 18.84 \end{array}$$

$$\begin{aligned}\text{Area} &= \pi r^2 \\ &= \pi(3)^2\end{aligned}$$

$$= 9\pi$$

$$= 28.26\text{cm}^2$$

$$\begin{array}{r} 3.14 \\ \times 9 \\ \hline 28.26 \end{array}$$

(d) Missing Number

i- 13, 24, 46, 90, 178,

Difference between consecutive numbers

$$24 - 13 = 11$$

$$46 - 24 = 22$$

$$90 - 46 = 44$$

$$178 - 90 = 88$$

Each is a multiple of two of the previous one

$$\text{So } 88 \times 2 = 176$$

$$178 + 176 = 354$$

The missing number is 354

ii - 5, 6, 9, 14, 21

Difference of consecutive numbers

$$6 - 5 = 1$$

$$9 - 6 = 3$$

$$14 - 9 = 5$$

$$21 - 14 = 7$$

The difference between the numbers is increasing by 2 ~~or an~~

$$\text{Therefore } 7 + 2 = 9$$

$$21 + 9 = 30$$

The missing number is 30