PART-II
SECTION-I
ANSWER:2
(a)
LIPIDS

Lipids are larger molecules made up of fatty acids (glycerides). They are required by the body in small amounts.

FUNCTIONS:

- Used for insulation of vital organs-heart, kidneys etc.
- Used for storage of vitamins (fat-soluble vitamins- A, D, E and K).
- Provide energy to the body.

Sources:

obtained from foods like fish, milk and sugars, oil and meat.

TYPES / CLASSIFICATION:

LIPIDS

Saturated	Unsaturated
- Solid at room temperature	- Liquid at room temperature
Example:	Example:
Butter, margarine, coconut oil etc.	Oils- corn, sunflower and vegetable oils (olive)

DEFICIENCY:

Deficiency of lipids affects growth and brain functioning.

EXCESS:

Excess of lipid intake causes high cholesterol, obesity and may lead to heart failure/disease (blockage of blood vessels).

(b)

ENERGY CONSERVATION

"Energy Conservation is defined as the optimal use of energy resources and minimizing losses."

Methods:

- Use of public transport or car-pool can eradicate fuel uses.
- Utilization of sunlight for daily activities can preserve electricity.
- Recycling water used for washing, cooking helps preserve energy.
- Governments must impose strict legislation on water wastage.
- Banning illuminating decorative lights in vast gathering can save energy.

- Transitioning to Renewable sources like solar, wind or geo-thermal energy production can prevent over-reliance on depleting fossil fuels and produce cleaner, sustainable energy.

Example:

Vision 2030 of MBS (KSA) provides an exemplary model to shift from oil-reliant economy to sustainable energy sources.

(c)

HYDROGEN BONDING

"A special kind of bonding based on attraction is prevalent in the hydrogen molecule – "Dipole-Dipole Forces."

These forces are comparitively weaker, that ionic or covalent bonds and are called Van der Waal's Forces.

BONDING:

In such a bond two-poles or a dipole is created within the hydrogen molecule. Hydrogen becomes the positive dipole that is bonded by attraction to the

negative dipole of oxygen.

(d)

NERVOUS SYSTEM

Nervous System of the body is based on an intricate network of **Neurons**. They are used to transfer sensory information from one organ to the other.

STRUCTURE:

The structure of a neuron is made up of axons and dendrites attached in long chain, having nerve-endings.

ANSWER=5

(a)

EUKARYOTIC CELL	PROKARYOTIC CELL
• Presence of a nucleus.	• Absence of nucleus.
• Genetic material in nucleolus.	• Genetic material in cytoplasm.
• Presence of vacuole.	• Absence of vacuole.
• Large number of membranous organelles	• Absence of cell organelles.

• These are mainly producers or composers/consumer (animal cells) Presence of cell membrane (in case of plant cell)	• These are hetero-troph's that rely on decomposition (Decomposers). Absense of cell-membrane
EXAMPLE:	EXAMPLE:
• Plants Cell.	• Bacteria (Campylobacter)
• Animal Cell	• Fungi

(b)

GLOBAL WARMING

"The increase in the average temperature of the earth is called global warming"

According to UNFCC, the average earth temperature has risen by 1.2°C in the last 100 years.

CAUSES:

- **Deforestation:** The cut-down of trees result in loss of carbon-sinks and more emission
- **Rapid Urbanization:** Fast-paced concrete construction causes heat entrapment.
- **GHGs:** Certain harmful gases

contribute to global warming.

CO_2 - 35% , CH_4 - 11% , CO - 11%

- **Burning of Fossils:**

To provide energy to ever-growing global population, industries; fuels are combusted which release toxic chemicals like CO, lead that increase temperature.

EFFECTS:

- **Loss of life:** Varied heat waves result in loss of precious human lives.
- July 2023 was hottest recorded July.
- England - 40°C for first time in history, 1400 people died in a week.
- **Forest Fires:**

Global warming causes forest fires that harm soil fertility, leading to food shortage and simultaneously result in atmospheric pollution.

- **Floods:**

Increased temperature results in fast-paced melting of glaciers causing catastrophic floods. This affects humans, plants and aquatic life in social and economic ways.

KYOTO PROTOCOL

It was signed in Japan in 1987 and came into effect in 1989.

PURPOSE:

The sole idea was to counter climate change and global warming by the emission reductions.

ISSUES:

- Developed states like USA and Canada that happen to be largest emittors of Carbon did not comply to set-standards.
- The decisions of the protocol are non-binding in nature.
- Rapid globalisation and industrialisation era's began.

PARIS AGREEMENT 2015:

The failure of Kyoto protocol led to creation of Paris Agreement in 2015. Under its compliance, COP are held every year but the implementation and results remain fairly unfruitful. Both of these failed miserably.

(c)

GIS

Geographic Information System.

GIS refers to a satellite-based system that is involved in collection, manipulation, arrangement and analysis of data.

Other Names: It is also called:

- **AGIS** - Autonomous Geographic Information System.
- **CAD** Compter-Assisted ~~Design~~ Drafting.

Parts of GIS:

- **Hardware:** The device on which information is viewed.
- **Software:** The tools used for mangement of data. (GUI- Graphical User Interface)
- **Data:** The information that is collected and organised / manipulated.
- **People:** Individuals who are involved in the data sorting.

DISCOVERY:

The system was informally launched when John Snow conducted a cholera survey in Soho City of London and discovered a water-pump vicinity to

be the hub of all Cholera outbreaks.

Uses of GIS:

① LAND ZONING:

GIS is used in zoning land based on tax assessment, earthquake zones, population explosion and disease outbreaks.

② Political Science:

Used to manage election results data.

③ Other Uses:

- Used to monitor natural disasters.
- See for environmental degradation.
- Maintain attendence records of students.
- Maintain deforestation or afforestation records.

(d)

ANTI-OXIDANTS

"Substances that are used to reduce the harmful effects of certain food

and chemical substances.

Example:

- Green Tea is known for its widespread anti-oxidizing capability.
- Chamoline tree, coffee beans contain anti-oxidants.

FUNCTION:

- They release stress.
- Posess substances that aid in digestive process.

SECTION-II
ANSWER:8

(a)

Dimensions =

Let, Length of room: $x = 15$ ft

Width/ Breadth of room: y

Given situation:

$$y = 60\% \text{ of } (x)$$

$$= \frac{60}{100}(x)$$

$$= \frac{3\cancel{60}}{\cancel{100}_{5}}(\cancel{x}^{3})$$

$$\boxed{y = 9 \text{ ft}}$$

Width of the room is 9 ft.

Area = Length × Width

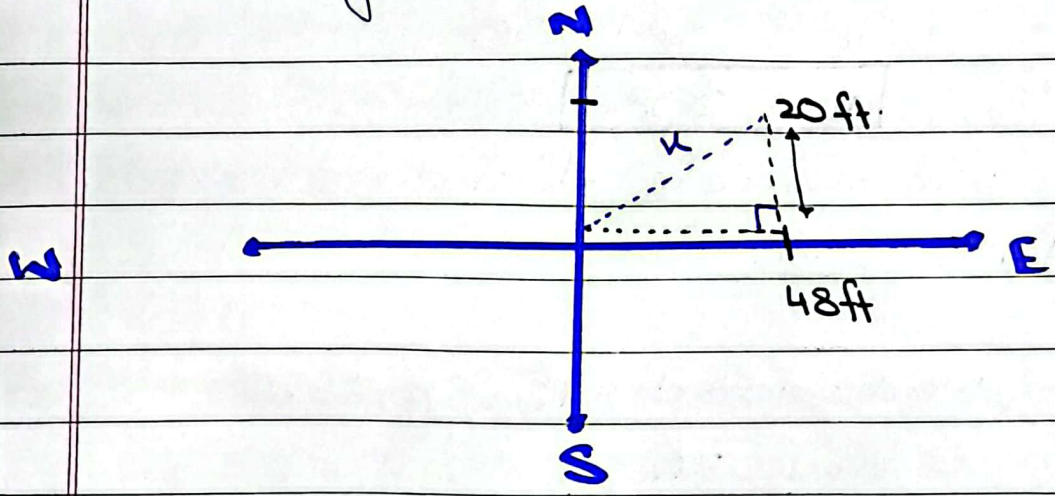
= (15 × 9) ft.

$$\boxed{A = 135 \text{ ft}^2}$$

The dimensions are 15 ft and 9 ft while area of room is 135 ft^2

(b)

Acc. to given condition:



Applying Pythagoras Theorem:

$$Hyp^2 = Per^2 + base^2$$

$$x^2 = (20)^2 + (48)^2$$

$$= 400 + 2304$$

$$x^2 = 2704 \text{ ft}$$

$$x = \sqrt{2704} \text{ ft}$$

$$\boxed{x = 52 \text{ ft}}$$

Thus,

If Veena would have ran straight, she would run 52 feet.

(c)

Given:

Number of students = 40

Average marks = 52.15

$$\text{Average} = \frac{\text{Sum of values}}{\text{Total no. of values}}$$

$$52.15 = \frac{x}{40}$$

$$x = 52.15 \times 40$$

$$\boxed{x = 2086}$$

The sum of marks of students were initially 2086.

Now,

Marks added = 49, original = 85

error = 36.

So, we add 36 marks in the sum.

$$x_2 = 2086 + 36$$

$$\boxed{x_2 = 2122}$$

$$\text{New average} = \frac{x_2}{40} = \frac{2122}{40} = 53.5$$

$$\boxed{\text{Average} = 53.5}$$

The average of the class is now 53.5.

(d)

PROBABILITY

Probability = $\frac{\text{Desire outcome}}{\text{Total Possible outcome.}}$

Prob(E) = $\frac{\text{no. of ways of occurence of an event}}{\text{total possible ways.}}$

Given:

Vegetable pizza = 37 people, chicken = 25 people

neither = 3

To Find:

To number of people = 37 + 25 + 3

= 65 people.

Prob (people who like chicken pizza) = $\frac{\text{People who like chicken pizza}}{\text{total number of people}}$

$= \frac{25}{65}$

$\text{Prob}_{(E)} = \frac{5}{13}$

Hence,

There is 5/13 probability of the person to like chicken pizza.

QUESTION: 6

(a)

Let the three-digit number be = x

Acc. to given conditions,

$$x_1 + x_2 + x_3 = 15$$

$$x_{10} + x_1 = 12.$$

$$x_{10} - x_1 = 2$$

$$x = ?$$

$$x_{10} + x_1 + x_{10} - x_1 = 12 + 2.$$

$$2x_{10} = 14.$$

$$\boxed{x_{10} = 7}$$

$$x_{10} + x_1 = 12.$$

$$x_1 = 12 - 7$$

$$\boxed{x_1 = 5}$$

So, $5 + x_2 + x_3 = 15$

$$x_2 + x_3 = 10$$

(b)

Total parts = 2+3+4 = 9

Ratio of slices = 2:3:4 (Small : medium : large)

weight of slice = 40 gm.

Price of smaller pizza = 320 RS.

Price of total weight = ?

Weight:

Small pizza = $\frac{2}{9}(40)$

= 8.88 grams.

medium pizza = $\frac{3}{9_3}(40)$

= 13.3 grams.

Large pizza = $\frac{4}{9}(40)$

= 17.7 grams.

Total weight = 8.88 + 13.3 + 17.7

= 39.88 g.

Price:

Small = $\frac{2}{9}(320)$ = 71.1 rs.

Medium = $\frac{3}{9_3}(320)$ = 106.6 rs.

Large = $\frac{4}{9}(320)$ = 143.6 rs

Total Price = 321.3 RS.

(c)

Diameter = 6cm

radius = 3cm.

Circumference: $2\pi r$

$= 2 \times 3.14 \times 3$

Circumference = **18.84 cm**

Area of circle = πr^2

$= (3.14)(3)^2$

$= (3.14)(9)$

Area = **28.26 cm^2**

(d)

i) 13, 24, 46, 90, 178, 354

($\times 2 - 2$).

ii) 5, 6, 9, 14, 21, 32

[+ next prime number]