

## Question no 2-a

### • Lipids :

Lipids are derived from the word "lipos" meaning fats. Primary building blocks of lipids are fatty acids & glycerol. They are insoluble in water and soluble in organic compounds like ether or alcohol.

### • Types of Lipids :

(i) Simple  
They are compounds of fatty acids and glycerol.  
For example: common fats and oils.

#### (ii) Derived :

They are simple lipids with an additional group.  
For example: phospholipids.

#### (iii) Derived :

They are derived from simple and compound lipids by hydrolysis.

### • Function of Lipids :

(i) They are a good source of energy.

(ii) They form steroids.

(iii) They are important for cytoplasm and cell membrane.

(iv) They are great storage boxes of energy.

## Question no 2-b

### • Energy conservation :

Energy conservation means the minimum use of energy in order to keep the environment clean and meet energy crisis.

Explain complex concepts in simple terms.

Use real-life examples to illustrate principles.

Include diagrams and flowcharts.

Discuss practical applications of scientific concepts.

Show all steps and working for calculations.

Use diagrams and graphs.



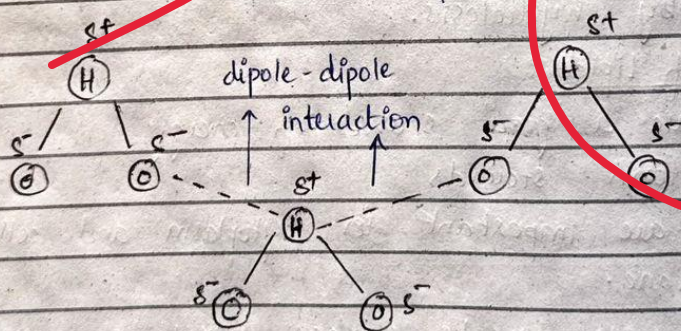
### • Measures for energy conservation

- (i) Awareness among people that why and how to conserve energy.
- (ii) Energy practices in on campus residence halls and apartments.
- (iii) Purchasing energy efficient equipment.
- (iv) Ban on all incandescent bulbs
- (v) Off all appliances when not in use.

### Question no 2-c

#### • Hydrogen Bonding:

Hydrogen bonding is the force of attraction between hydrogen atom of one molecule and atom of high electronegativity in another molecule. For example water ( $H_2O$ )



### Question no 2-d

#### Nervous System

Nervous system of a human body contains several organs and parts of body which are responsible for the proper functioning of



our body. Primarily contains brain and spinal cord.

### (i) Brain

Brain is protected by a strong bone called cranium and contains cerebrospinal fluid. Further divided into three parts fore, mid and Hind.

#### (a) Forebrain:

Contains following three parts:

##### ◦ Thalamus:

Transfers sensory information to the limbic system (auditory and visual)

##### ◦ Limbic System:

Hypothalamus controls body-temperature

Amygdala produces sensations

Hippocampus controls long term memory.

#### (b) Mid brain

Connects forebrain with hindbrain

#### (c) Hindbrain

##### ◦ Medulla

controls breathing, heart rate and blood pressure

##### ◦ Pons

controls transition between sleep and waking

##### ◦ cerebellum

coordinating movements and positions

### (ii) Spinal cord

Medulla oblongata of brain narrows down into an oval hollow cylinder running through vertebrae called spinal cord



### Question no 3-a

#### (i) Sun:

Sun is by far the largest object in the solar system. It is a major source of heat energy on earth.

#### (ii) Composition of Sun:

##### • Core:

The innermost zone of sun and produces all the heat and light through fusion reactions.

##### • Radiative:

Surrounds the core of the sun. Heat and energy generated in core move out to radiative zone as electromagnetic radiation.

##### • Convective:

Outer layer of sun, heat from radiative zone heats up the lower levels which rise to surface.

#### (iii) Atmosphere of Sun

##### • Photosphere:

This is the surface of the sun at about 5800 K temperature.

##### • Chromosphere:

Above the photosphere, and the temperature increases as you move upwards. Due to excessive heat, it is red in color.

##### • Corona:

The highest part of sun's atmosphere, gets hotter as you move away.



### Question no 3-b

#### (i) Tsunami

The literal meaning of Tsunami is "harbor wave". A very large ocean wave that is caused by an underwater earthquake or landslide or volcanic eruption and causes extensive destruction when it strikes land.

#### (ii) Causes of Tsunami

- Earthquake
- Landslide
- Volcanic eruption

#### (iii) Tsunamis in History

- Sumatra Indonesia (2004)
- Japan (2011)

### Question no 3-c

#### (i) Environmental Pollution

When air contains gases, dust or other in harmful amount then it is called polluted air.

- Primary air pollutants get directly into air from their source.
- Secondary air pollutants derive from primary air pollutants.

#### (ii) Some harmful pollutants

- Carbon monoxide
- Nitrogen and sulphur oxides

#### (iii) Effects

- Oxides of sulphur and nitrogen cause acid rain which destroys crops



• CO is a highly poisonous gas and causes suffocation

• SO<sub>x</sub> and NO<sub>x</sub> have pungent odors and cause irritation to eyes.

Question no 6-a

number =  $xyz$

Sum =  $x+y+z = 15$

$y+z = 12$  ,  $y-z = 2$

Hence  $x = 3$

$$\begin{array}{r} y+z=12 \\ y-z=2 \\ \hline 2y=14 \\ y=7 \end{array}$$

$x=3, y=7, z=5$

number = 375

Question no 6-c

Diameter = 6cm

Radius = 3cm

Circumference =  $2\pi r$

$$\begin{array}{r} 2(22)(3) \\ 7 \\ \hline 314 \\ \times 6 \\ \hline 1884 \\ = 18.84 \text{ cm} \end{array}$$

Area =  $\pi r^2$

$$\begin{array}{r} 22(3) \\ 7 \\ \hline 1304 \\ \times 9 \\ \hline 28026 \\ = 28.026 \text{ cm}^2 \end{array}$$

Question no 6-d

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

$$[(178 \times 2) - 2]$$

(ii) 5, 6, 9, 14, 21, 30

$$(30 - 21 = 9)$$