

Part-2

Section-A

Question #2:-

a) According to big bang theory, universe was created in gigantic explosion called big bang. The universe started from a very hot and tiny point. It began to expand and is still expanding today. As it cooled down, small subatomic particles formed and joined to make atoms. Due to gravity, these atoms came together to form stars and galaxies. Galaxies are grouped into clusters and superclusters. There are large empty spaces exist b/w these groups in universe.

b) Urinary system:-

The urinary system is the body system that removes waste products and extra water from blood by producing and excreting urine.

Working of Nephron

i) Filtration:- Blood containing waste products enters into Glomerulus. Due to high bp and porous walls of the Glomerulus blood is filtered here. Blood cells and proteins remain in the Glomerulus while glucose, urea and acid

and some important salts are filtered here. That filtrate enters into the proximal part of nephron.

ii) Reabsorption:- All the useful constituents of filtrate like glucose, salts and water is reabsorbed in the proximal, loop of Henle and distal part of the nephron by the Peritubular capillaries which are surrounding these parts.

iii) secretion:- The inner layer of the nephron also secretes nitrogenous waste products into the lumen of nephron.

All waste products from distal part enter collecting duct which opens in pelvis. From there they enter Ureter and stored in urinary bladder and then excreted outside through urethra.

C- Un-balanced diet:-

un-balanced diet is not consuming right amount of nutrients - It means not eating right kind or amount of food that body needs to stay healthy.

Affect on healthy living:-

- Feeling weak and tired.
- Causes slow growth in children

- leads to illness
- Cause weight problems
- Affects concentration and learning
- If last for many years, can lead to severe illness

d)

Cell wall:-

Structure:-

An additional covering present in plant cell mainly composed of cellulose - It is thick and rigid.

Function:-

- It give support and shape to plant cell.
- It protects the cell.
- It prevents the cell from bursting.

Cell membrane:-

Structure:-

A thin and flexible covering present around both plant cell and animal cell. It is composed of 60-80% proteins, 20-40% lipids and traces of carbohydrates.

Functions:-

- It is semipermeable i.e allow some particles to enter or leave the cell.

- It protects cell's inner part

- It maintains cell shape.

Cytoplasm

Structure:-

A semi-fluid substance that is present within cellular membrane and surrounds nuclear membrane.

It is 70-90% made up of water and is colourless.

Functions:-

- It is the site of bio-chemical reactions.

- Cell organelles are present inside it.

- It is means of transport for genetic material.

- It is the place where cell expands and cell growth occurs.

Mitochondria:-

Structure:-

Mitochondria is an oval shaped organelle composed of two membranes- outer membrane is smooth, while inner membrane has finger like projections called Cristae. Inside mitochondria, there is liquid called matrix. They have their own DNA and ribosomes.

Functions:-

- They are self-replicating bodies.

- They are called the power house of cell, they synthesize ATP which is used to provide energy to cell.

- They also help cells to respire.

Question no. 4:-

a) heart pumps de-oxygenated blood from body into lungs through blood vessels. In lungs, blood releases CO_2 and takes in oxygen. The oxygenated blood then returns to the heart. The heart then pumps this oxygenated blood to all parts of body through arteries. Blood gives oxygen and nutrients to body cell and in return cell gives waste products in the blood. This deoxygenated blood flows back to heart through veins and whole process repeats.

Role of heart:-

- heart acts like a pump which pumps blood to body parts.

- It removes waste products like CO_2 from blood and give oxygen and nutrients to blood.

Role of blood vessels:-

- Arteries carry blood away from heart, veins carry bloods towards heart and blood capillaries help in exchange

of gases and nutrients-

b) Cyclone:-

A cyclone is a violent storm with strong winds that move in a circular manner around a low pressure center. It usually forms over warm oceans and brings heavy rains, strong winds and sometimes flooding.

Formation of cyclone:-

- Warm ocean water heats the air above it, warm air rises which causes low pressure areas - cool air rushes to fill that gap, but it also warms up and rises. Due to earth's rotation, it starts spinning - The storm grows stronger and stronger due to continuous warm air and forms cyclone.

c) Functions:-

i) Carbohydrates:-

- They are the main source of energy for body -
- Living things also use it as a means of storage for further use.
- In plants and bacteria, they are the main component of cell wall.

Proteins:-

- They are the help in growth.
- They are other body
- They are amount

Fats:-

- They
- They
-

Cal

Proteins:-

- They are the basic foundation of human body help in growth and repair of body tissues.
- They are used to make enzymes, hormones and other body chemicals.
- They are the macronutrient, we need large amount of them for healthy life.

Fats:-

- They are good source of energy.
- They keep the body warm.
- They protect internal organs.

Calcium:-

- makes bones and teeth stronger.
- Needed for muscle movement.

Iron:-

- It helps forming hemoglobin in blood.
- Carries oxygen to all body parts.
- Prevents anemia.

d) Remote sensing can be used by collecting information through satellites and aircraft without directly involving. It can be employed for

- Monitoring forests to detect fires and deforestation.

- studying weather patterns such as rain fall, cyclone, thunderstorm etc.
- Tracking pollution in water and air.
- Managing natural resources like water, soil etc.
- observing changes in land use such as urban growth and agriculture.
- Predicting natural disasters.

Section B

Question 6:-

- a) That woman is the mother of Ahsan
- b) $\frac{\text{Length}}{\text{breadth}} = \frac{3}{2} \Rightarrow l = \frac{3b}{2}$

$$\text{Speed} = 12 \text{ km/hr} = \frac{12 \times 1000}{3600} = \frac{10}{3} = 3.334 \text{ m/sec}$$

$$\text{time} = 8 \text{ minutes} = 8 \times 60 = 480 \text{ sec}$$

Area = ?

$$\text{distance} = V \times t = 3.334 \times 480 = 1600.32 \text{ m}$$

$$\approx 1600 \text{ m}$$

$$\text{distance} = \text{Perimeter} = 2(l+w)$$

$$\frac{1600}{2} = l+w$$

$$800 = \frac{3b}{2} + b$$

$$800 = \frac{3b}{2} + \frac{2b}{2}$$

$$800 = \frac{5b}{2}$$

$$\frac{160}{800 \times 2 = b}$$

$$b = 320 \text{ m}$$

$$l = 3 \times \frac{160}{2} = 480$$

$$\text{Area} = l \times b = 320 \times 480$$

$$\boxed{\text{Area} = 153600 \text{ m}^2}$$

c) $10x + y$

$$y = x + 2$$

$$(10x + y) \times (x + y) = 144$$

$$(10x + x + 2) \times (2x + 2) = 144$$

$$(11x + 2) \times (2x + 2) = 144$$

$$22x^2 + 22x + 4x + 4 = 144$$

$$22x^2 + 26x - 140 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-26 \pm \sqrt{(26)^2 - 4(22)(-140)}}{2(22)}$$

$$= \frac{-26 \pm \sqrt{676 + 12320}}{44} = \frac{-26 \pm \sqrt{12996}}{44}$$

$$= \frac{-26 \pm 114}{44}$$

$$\begin{array}{r} 160 \\ \times 2 \\ \hline 320 \end{array}$$

$$\begin{array}{r} 160 \\ \times 3 \\ \hline 480 \end{array}$$

$$\begin{array}{r} 320 \\ \times 480 \\ \hline \end{array}$$

$$\begin{array}{r} 153600 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ \times 26 \\ \hline \end{array}$$

$$\frac{-26+144}{44}$$

$$\text{or } \frac{-26-144}{44} = \frac{-170}{44} \text{ (not possible)}$$

$$\frac{882}{44}$$

$$x=2 \Rightarrow y=2+2=4$$

$$10(2)+4=24$$

D. Let two numbers $2x$ and $3x$

~~$x=2$~~ L.C.M. of $2x$ and $3x \Rightarrow 6x$

$$\text{L.C.M.} = 48$$

$$6x = 48$$

$$x = 8$$

$$2(8) = 16, 3(8) = 24$$

$$\text{Sum} = 16 + 24 = 40$$

Question no. 7:-