

UPPCS PRE 24 MA ANSWER-52

1. Which of the following is/are the parts of the alimentary canal of human beings?

1. Pharynx
2. Small intestine
3. Stomach
4. Liver

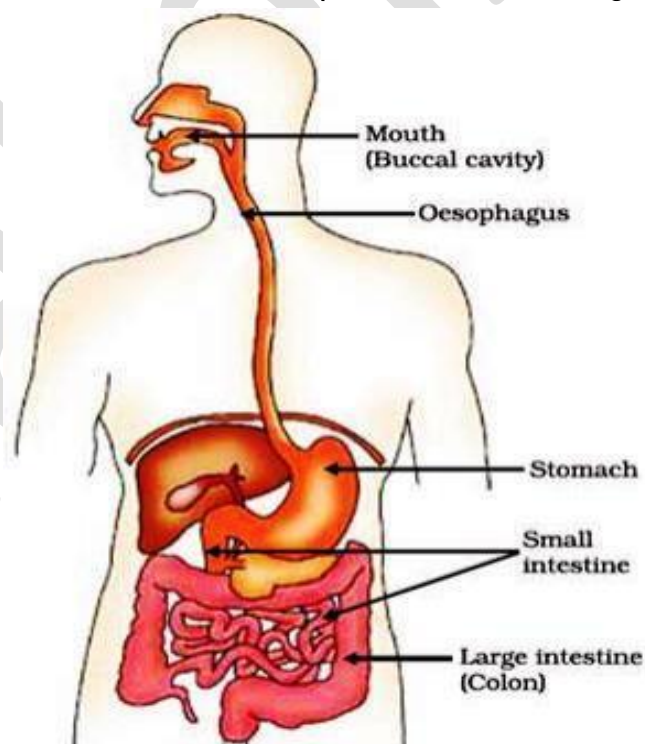
Code:

- (a) 2 and 3 only
- (b) 1, 2 and 3 only
- (c) 1, 3 and 4 only
- (d) 3 and 4 only

1. Answer - (b)

Alimentary canal

- It is a **long and continuous tube** which extends from the **mouth to the anus**.
- The alimentary canal of a human is about **30 feet** long which is divided into the following parts -
 - Oral cavity
 - Pharynx
 - Oesophagus
 - Stomach
 - Intestine (small intestine and large intestine)



Additional knowledge:

Digestive system

- The organs involved in the digestive system of humans are divided into two main parts - **alimentary canal** and **auxiliary digestive glands**.

2. Consider the following statements:

1. Human beings are 'heterodonts'.
2. In human beings 'canines' are the frontmost teeth whose function is to cut food.
3. In human beings, canines and wisdom teeth are vestigial structures.

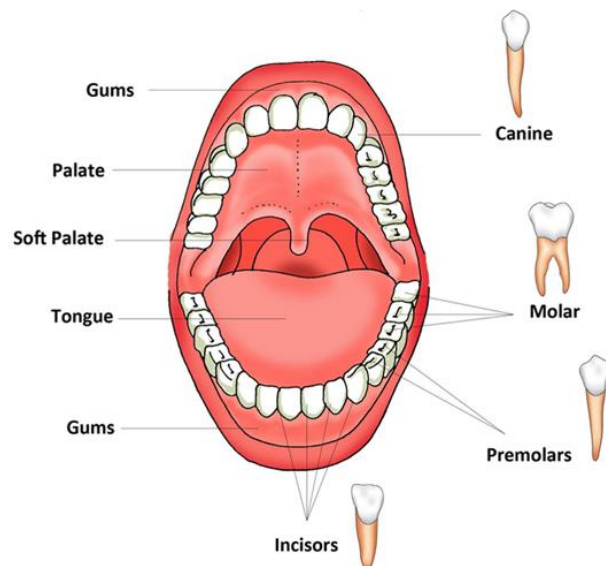
Which of the above statements is/are correct?

- (a) 1 and 2 only
- (b) 1, 2 and 3
- (c) 2 and 3 only
- (d) 1 and 3 only

2. Answer - (d)

Teeth

- Humans are **heterodont**, that is, **4 types** of teeth are found in humans, **incisor, canine, premolar and molar**.
- **Incisors** are the **front teeth** whose function is to **cut the food**.
- **Canines** are pointed teeth whose function is to **tear the food**.
- **Premolars and Molars** are called '**Cheek Teeth**' whose function is to **grind the food**.
- **Third molars** emerge at the age of about **20 years** which are called '**Wisdom Teeth**'. These emerge last. Most people have **four wisdom teeth**.
- In humans, **canines and wisdom teeth** are **vestigial structures**.



Additional knowledge:

- **Enamel** is the **upper layer of the tooth**. Enamel is the **hardest part** of the human body.
- Enamel is made up of about **98 percent calcium salts** (calcium phosphate and calcium carbonate) which is strengthened by **fluorine**.

3. Consider the following statements:

1. In human beings, digestion starts from the oral cavity itself.
2. Only 2 pairs of salivary glands are found in

3. Answer - (c)

Digestion in Mouth Cavity

- Digestion starts from the mouth cavity itself where the food is churned with the help of '**saliva**'.
- Humans have **three pairs** of major **salivary glands** (**parotid, submandibular and sublingual**), along with hundreds of small salivary glands.

humans.

3. An enzyme called 'tylin' is present in saliva which breaks down the starch of food into disaccharide maltose.

How many of the above statements are correct?

- (a) Only one
- (b) All three
- (c) Only two
- (d) None

- All salivary glands secrete saliva which contains 99 percent water and 1 percent enzymes.
- Mainly two types of digestive enzymes - ptyalin and lysozyme are found in saliva.
- An enzyme called 'ptyalin' is present in saliva which breaks down the starch of food into disaccharide maltose.
- Lysozyme and thiocyanate ions present in saliva destroy the microbes and bacteria that come with the food.
- About 30 percent of the starch present in the food is digested in the mouth cavity itself.

Additional knowledge:

Oral cavity

- Oral cavity is the first part of the food pipe. It contains tongue and teeth.
- To experience taste, taste buds are found on the upper surface of the tongue which make us experience sweet, sour, salty and bitter taste.
- Salivary glands are not found in frogs and whale fish.

4. Consider the following statements with reference to 'Oesophagus':

- 1. It is a long tube which opens into the stomach.
- 2. Gastric glands are found on its inner wall.
- 3. It is the main site of protein digestion.
- 4. Due to its peristaltic action, the food slides downwards.

How many of the above statements are correct?

- (a) All four
- (b) Only one
- (c) Only two
- (d) Only three

4. Answer - (c)

Oesophagus

- Food containing saliva from the oral cavity reaches the oesophagus.
- This is a long tube which opens in the stomach.
- Due to its peristalsis action, the food slides downwards.
- No digestion process takes place here.

Additional knowledge:

Stomach

- This is a structure spread on the left side of the chest cavity which is divided into three parts - (i) anterior part (cardiac), (ii) middle part (fundic) (iii) posterior part (pyloric).
- Gastric glands are found on its inner wall.
- Protein digestion is a major part of it.
- The gastric glands present on the inner wall of the stomach secrete gastric juice, which is highly acidic (pH = 1.8).
- Gastric juice includes digestive enzymes such as pepsin and rennin and hydrochloric acid (HCl) and mucus.

- In the presence of HCl, pepsinogen turns into active pepsin and breaks down proteins into simpler molecules (first proteoses, then peptones). Pepsin is secreted by the chief cells, which are present in abundance near the abdominal glands.
- Similarly, in the presence of HCl, inactive prorenin turns into active rennin. This **rennin converts the carcinogen protein present in milk into casein.**

5. Consider the following statements with reference to pancreatic juice:

1. It is secreted by the liver which is stored in the gall bladder.
2. No digestive enzyme is found in it.

Which of the above statements is/are correct?

- (a) Only 1
- (b) Neither 1 nor 2
- (c) Only 2
- (d) Both 1 and 2

5. Answer - (b)

Pancreatic Juice

- Pancreatic juice is **alkaline** which is **secreted by pancreatic cells.**
- It contains **98 percent water** and the remaining **2 percent enzymes and salts (sodium bicarbonate).**
- It contains digestive enzymes for digestion of **carbohydrates, fats, proteins** etc. Hence, it is called '**Complete Digestive Juice**'.
- It contains enzymes like **amylase, trypsin, chymotrypsin, carboxypeptidase, lipase** etc.

Additional Knowledge:

Bile Juice

- Bile juice is **secreted by the liver** which is **stored in the gallbladder.**
- Bile juice is a **thick, greenish-yellow coloured slightly alkaline fluid.** About **600 ml** of bile juice is **secreted in a human being every day.**
- **No digestive enzyme** is found in bile juice. Bile pigments such as **bilirubin, bile-verdin** etc. are also found in it.
- **Two salts** present in bile juice - '**sodium glycocholate**' and '**sodium taurocholate**' mix the fat present in the food with water and break it into small droplets which is called **emulsification of fat.**
- Bile juice also plays an important role in the **absorption of fat soluble vitamins (A, D, E, K).**
- If the gall bladder of a person is removed, then **fat cannot be digested** normally in that person.

6. Consider the following statements with reference to 'vermiform appendix':

1. It is a twisted and coiled tube about 2 inches long attached to the small intestine.
2. In humans it is an example of a vestigial organ.

Which of the above statements is/are correct?

- (a) Only 2
(b) Both 1 and 2
(c) Neither 1 nor 2
(d) Only 1

6. Answer - (a)

Large Intestine

- The large intestine is wider than the small intestine, but **shorter in length**. In humans it is about **5 feet long and 2.5 inches wide**.
- The large intestine is divided into **three parts** -
 - **Cecum**
 - **Rectum**
 - **Colon**
- In humans, a **bend from the cecum is called the colon**.
- A **twisted and coiled structure** of about 2 inches long called '**vermiform appendix**' comes out. **Vermiform appendix is a vestigial organ**.
- The **large intestine does not secrete any enzyme**. Its function is **only to store undigested food for some time**. Here water and some minerals are absorbed.

Additional knowledge:

Intestinal juice

- It is a **light yellow coloured slightly alkaline fluid**, which is secreted by intestinal glands.
- In humans, about 2-3 litres of intestinal juice is secreted daily.
- The following enzymes are present in intestinal juice -
 - **Maltase** - Converts maltose into glucose.
 - **Sucrase** - Converts sucrose (sugar) into glucose and fructose.
 - **Lactase** - Converts lactose into glucose and galactose.
 - **Erepsin** - Breaks down di and tri peptides (components of protein) into **amino acids**.

7. Consider the following statements:

1. 'Pulmonary artery' is the only artery in the human body in which pure blood flows.
2. The site of gaseous

7. Answer - (c)

Lungs

- In humans, **one spongy, pink and almost conical lung** is found on each side of the chest cavity.
- The concave groove of the left lung is called the **cardiac notch**, in which the heart is located.
- Impure blood is transported to the lungs through the

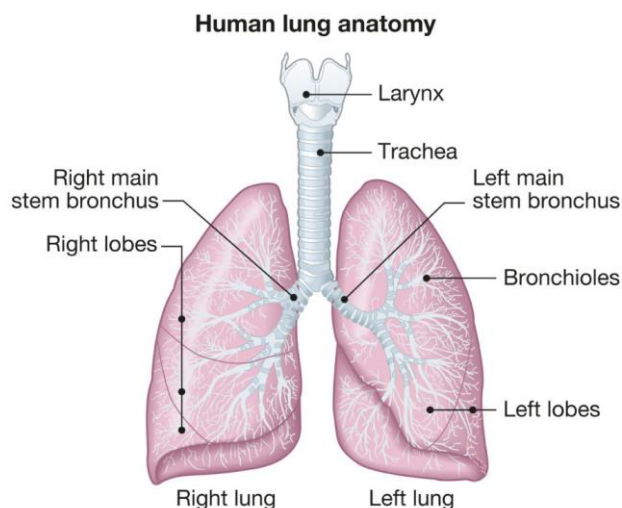
exchange in lungs is 'alveoli'.

Which of the above statements is/are correct?

- (a) Both 1 and 2
- (b) Neither 1 nor 2
- (c) Only 2
- (d) Only 1

'pulmonary artery'. This is the **only artery** in the human body in which **impure blood flows**.

- The blood purified by the lungs (oxygenated blood) is transported to the left atrium of the heart through the '**pulmonary vein**'. This is the **only vein in the human body in which pure blood flows**. The **presence of diaphragm** is a **fundamental characteristic of mammals**.
- The exchange of O_2 present in the air taken from outside in the alveoli of the lungs and CO_2 present in the impure blood flowing in the capillaries above the alveoli through the respiratory membrane is called '**gas exchange**'. Gas exchange takes place **by diffusion method**.



Additional Knowledge:

Respiratory System

The respiratory system of humans is made up of the following organs -

- Nose
- Pharynx
- Larynx
- Trachea
- Lungs

Apart from this, **bronchi and bronchioles, diaphragm and intercostal muscles** also help in respiration.

8. Given below are two statements, one is Statement (A) and the other

8. Answer - (d)
Respiration

is Reason (R).

Statement (A): Glucose is often called cellular fuel.

Reason (R): Under normal conditions in respiration glucose is oxidised in the presence of oxygen and energy is released.

Choose the correct answer from the code given below:

- (a) Both A and R are but (R) is not the correct explanation of (A).
- (b) A is incorrect but R is correct.
- (c) A is correct but R is incorrect.
- (d) Both A and R are correct and (R) is the correct explanation of (A).

- Respiration is an important process in living beings in which energy is produced. In this process, under normal conditions, glucose is oxidised in the presence of oxygen and energy is released. This is why glucose is called **cellular fuel**. Hence, **both A and R are correct and the correct explanation of (A) is (R).**

Additional Knowledge:

- The process of respiration is similar in all living beings and plants.
- The process of respiration is expressed by the following equation -
 - **Glucose + Oxygen = Carbon Dioxide + Water + Energy**
- The rate of respiration is **12-15 times per minute** in adult humans and about **44 times per minute** in infants.
- The process of respiration is **completely under nervous control**.

9. Consider the following statements:

- 1. Blood is a fluid connective tissue and natural colloid.
- 2. About 55 per cent of the total blood volume of a human being is 'plasma'.

Which of the above statements is/are correct?

- (a) Only 2
- (b) Both 1 and 2
- (c) Neither 1 nor 2
- (d) Only 1

9. Answer - (b)

Blood

- Blood is a **liquid connective tissue** and **natural colloid** which is mainly composed of two components -
 - **Plasma**
 - **Blood Cells**
- **Plasma** - Plasma is about **55 percent of the total blood volume of a human**. It is a **colourless liquid** and most of it (about **90 percent**) is **water**. Many proteins are found in it. It works to transport CO₂, hormones and waste. **Globulin, Albumin and Fibrinogen** are **plasma proteins** formed in the liver.
- **Blood Cells** - These are mainly of three types -
 - **Red Blood Cells (Erythrocytes)**
 - **White Blood Cells (Leukocytes)**
 - **Platelets**

Additional Knowledge:

Circulatory System

- The circulation of blood in the body always takes place in a certain direction and the function of blood circulation is

performed by the heart. **Blood circulation** was discovered by 'William Harvey'.

- The body of multicellular animals has a system for the transportation of various nutrients, gases, excretory substances etc. which is called the **circulatory system**.
- In humans, various substances such as **digested food, oxygen, hormones, and waste products** are transported to the respective organs and tissues through blood and lymph.
- The blood circulation system consists of **heart, blood and blood vessels**.

10. Consider the following statements:

1. The bone marrow makes most of your red blood cells.
2. The spleen is also called the graveyard of RBCs as it disposes of dead RBCs.
3. Blood pressure is controlled by the adrenal gland.

Which of the above statements is/are correct?

- (a) Only 1 and 2
- (b) Only 2 and 3
- (c) Only 1 and 3
- (d) 1, 2 and 3

10. Answer - (d)

- Blood cells (**RBC, WBC, platelets** etc.) are formed in the **red bone marrow** from birth to adulthood.
- The **spleen** is also called the **graveyard of RBCs** because it **disposes of dead RBCs**.
- **Blood pressure** is controlled by the **adrenal gland**.

Additional knowledge:

Red blood corpuscles (RBCs)

- These cells are **spherical** and **do not have a nucleus**. The colour of blood is **red due to a red pigment** called **haemoglobin**. They carry oxygen. Their **life span** is about **120 days**.

White blood cells (WBCs)

- These are **irregular in shape** and contain a **nucleus**. The number of **white blood cells** in the blood is **less than that of red blood cells**. They protect the body from infection. They are the largest among the blood cells. The **life span** of WBC is **10-13 days**. Monocyte or nucleus is the largest white blood cell.

11. How many of the following organs are included in the 'excretory system' of humans?

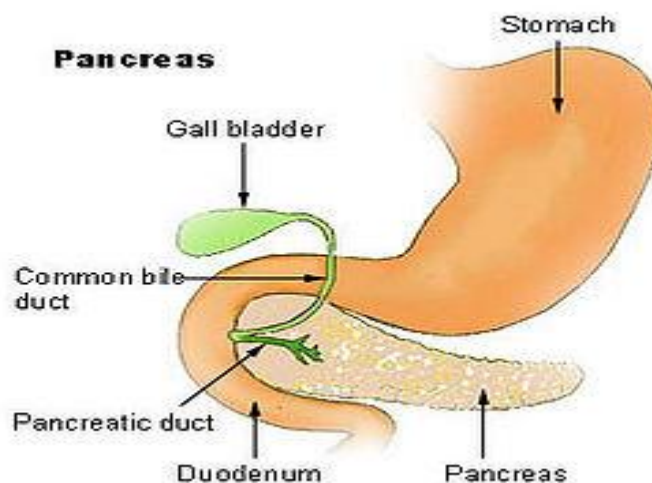
1. Kidney
2. Lung
3. Skin

11. Answer - (a)

Excretory System

- The **main function** of the excretory system of humans is to **remove waste from the body**. The following organs are included in the excretory system of humans -
 - **Kidney**

<p>4. Liver</p> <p>Code:</p> <p>(a) All four</p> <p>(b) Only three</p> <p>(c) Only two</p> <p>(d) Only one</p>	<ul style="list-style-type: none"> ○ Lung ○ Skin ○ Liver ○ Large Intestine <ul style="list-style-type: none"> • The Urinary System in humans is made up of a pair of kidneys, a pair of urethra, a urinary bladder and a urethra. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><u>Additional Knowledge:</u></p> <p>Liver</p> <ul style="list-style-type: none"> • With the help of special enzymes, the liver converts excess ammonia into urea which is less harmful than ammonia. • Bile pigments are formed in the liver due to the breakdown of haemoglobin of dead RBCs. Bile pigments reach the intestines with bile juice and come out of the body with faeces. <p>Skin</p> <ul style="list-style-type: none"> • The sweat glands of the skin take water, salts and urea from the blood and come out of the body in the form of sweat. Along with this, sebum secreted from the oily glands also excretes many excretory substances. <p>Lungs</p> <ul style="list-style-type: none"> • The lungs excrete CO₂ dissolved in the blood during the process of exhalation during the process of respiration. They also emit water vapour. </div>
<p>12. Which of the following is a heterocrine gland found in the human body?</p> <p>(a) Gall bladder</p> <p>(b) Kidney</p> <p>(c) Pancreas</p> <p>(d) Liver</p>	<p>12. Answer - (c)</p> <ul style="list-style-type: none"> • Heterocrine glands (or mixed glands) are those glands which function as both exocrine glands and endocrine glands. • The 'pancreas' is a glandular organ of the digestive and endocrine system of vertebrates. It is an endocrine gland that produces many essential hormones like insulin, glucagon and somatostatin and it is also an exocrine gland that secretes pancreatic juice, hence it is also called a 'mixed gland'.



Additional Knowledge:

The main endocrine glands found in humans are as follows -

- Pituitary gland
- Parathyroid gland
- Pineal gland
- Pancreas
- Thyroid gland
- Adrenal gland
- Thymus gland
- Genetic glands

13. How many of the following polysaccharides are examples of carbohydrates?

1. Glucose
2. Cellulose
3. Chitin
4. Fructose

Code:

- (a) Only three
- (b) All four
- (c) Only one
- (d) Only two

13. Answer - (d)

Types of carbohydrates and their examples

- **Monosaccharides** - Erythrose, Glucose, Fructose and Galactose
- **Disaccharides** - Sucrose, Maltose, Lactose
- **Polysaccharides** - Starch, Glycogen, Cellulose, Chitin

Additional Knowledge:

Carbohydrates

- Carbohydrates are **simple sugars** or substances that can be converted into **sugars by hydrolysis**.
- These are made up of **carbon, hydrogen and oxygen**, of which water can be formed by mixing the last two in proportion and hence they are called **carbohydrates**.
- Its general formula is **$C_nH_{2n}O_n$** .
- **50-79%** of the **total energy requirement** of the human body is fulfilled by carbohydrates.

Types of carbohydrates

- Monosaccharides
- Disaccharides
- Polysaccharides

14. Consider the following statements with reference to 'Protein':

1. These are very complex nitrogenous substances.
2. Their deficiency in food stops physical and mental growth.
3. Its deficiency causes diseases called 'marasmus' and 'kwashiorkor' in infants.

Which of the above statements is/are correct?

- (a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

14. Answer - (d)

- 'Protein' is a **very complex nitrogenous substance** which is formed by different combinations of about **20 amino acids**. These **amino acids** are very essential for the **proper nutrition of the body**.
- 'Protein' is essential for **physical growth and processes**.
- Their **deficiency** in food stops **physical and mental growth**.
- Protein deficiency causes **rickets (marasmus)** and a disease called '**kwashiorkor**' in infants.

Additional knowledge:

Casein

- Casein protein is **digested slowly** in the body, it has **catabolic properties**. It does not allow the muscles to break down in the absence of food. It is found in **milk, curd, cheese** etc.

Glutelins

- It is a **protein found in cereals**.

Fibrinogen

- Fibrinogen is a **protein found in the blood** which is **needed to form clots**.

Globin

- It is a **protein found in the blood**, which **transports oxygen** in the form of **haemoglobin**.

Elastin

- It is also a **fibrous protein**, which is found in the yellow tissue of ligaments and **blood vessels**. It is also found in connective tissues but is a **different type of protein compared to 'collagen'**. It has the **property of flexibility**.

15. Consider the following pairs:

Modifications of tap roots - examples

1. Fusiform - Radish

15. Answer - (a)

Modifications of tap roots

- In some plants, tap roots become thick and fleshy by storing food materials and due to this their shape also changes.

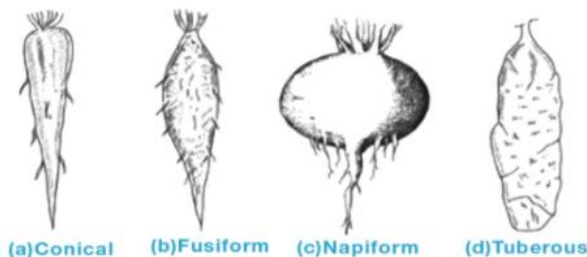
2. Conifer - Carrot
3. Napiform - Turnip
4. Pneumatophore - Beetroot

How many of the above pairs are correctly matched?

- (a) Three pairs
- (b) Two pairs
- (c) One pair
- (d) Four pairs

Based on the shape, the tap root is called by different names -

- **Fusiform** - This type of tap root is swollen in the middle and thin towards the base and top. For example - **Radish**.
- **Conical** - This type of tap root is thick towards the base and gradually thin towards the bottom. For example - **Carrot**.
- **Napiform** - The upper part of this type of tap root is almost round and swollen and suddenly becomes thin from the bottom. For example - **Turnip, Beet** etc.
- **Pneumatophore** - In plants like **Rhizophora, Sundari** etc. which grow in **marshy places**, a special type of roots emerge from the underground main roots, which is called **Pneumatophore**. These are **peg shaped**, which come out in the air above.



Additional knowledge:

- The part of the plant which develops from the radicle and enters the soil and moves in the direction of light is called the **root**. It is of **two types** - **tap root, adventitious root**

Tap root

- This type of root is mostly found in **dicotyledonous plants**. In this type of root, the radicle develops and forms a main root.

16. Consider the following statements with reference to fat:

1. It is one of the three nutrients that supply calories to the body.
2. It gets deposited under the skin and prevents the body heat from escaping.
3. It adds flavour to food and makes the diet tasty.

How many of the above

16. Answer - (b)

Fat

- It is an **organic compound** made up of **carbon, hydrogen and oxygen**. It is found in **liquid or solid form**.
- It is **one of the 3 nutrients** that supply **calories** to the body. 1 gram of fat contains 9 calories which is **double compared to carbohydrates or proteins**.
- It gets **deposited under the skin and prevents the body heat from escaping**.
- It adds flavour to food and makes the diet tasty.

statements are correct?

- (a) Only one
- (b) All three
- (c) Only two
- (d) None

Additional knowledge:

Mineral salts

- These are **inorganic substances**. At least **29 elements** are found in the human body. Although energy is not obtained from minerals, they are needed for various reactions of the body.

Functions of mineral salts

- Due to the ions of salts, there is electrical conductivity in the cytoplasm. This is why there is sensitivity in the cytoplasm.
- In many chemical reactions, **ions act as binders**.
- They take part in the **formation of many tissues, blood, bones, teeth** etc.
- They play an important role in **heart beat, muscle contraction** etc.

17. Match List I (Modification of adventitious root) with List II (Examples):

List I	List II
A. Tuberous roots	1. Dahlia
B. Pulpit roots	2. Common turmeric
C. Nodular roots	3. Sweet potato
D. Brassic roots	4. Grapes

Select the correct answer from the code given below:

- (a) A-3, B-1, C-2, D-4
- (b) A-4, B-1, C-2, D-3
- (c) A-3, B-2, C-1, D-4
- (d) A-4, B-2, C-1, D-3

17. Answer - (a)

Tuberous roots (Modification of adventitious root)

- **Tuberous roots** - Due to accumulation of food substances, this type of adventitious root **does not have any definite shape**. For example - **sweet potato**.
- **Fasciculated roots** - In this type of adventitious roots, many fleshy swollen roots emerge from the base of the stem in the form of a bunch. For example - **Dahlia**.
- **Nodulose roots** - This type of adventitious roots swell at their ends and become fleshy. For example - **Mango ginger**.
- **Moniliform roots** - This type of adventitious roots remain swollen at short intervals. They are shaped like a garland of beads. For example - **grapes, bitter gourd**

Additional knowledge:

Adventitious root

- This type of roots are found in **monocotyledonous plants**.
- The roots that develop from any part of the plant other than the radicle are called '**adventitious roots**'.

18. How many of the following are

18. Answer - (c)

water soluble vitamins?

1. Vitamin B
2. Vitamin A
3. Vitamin C
4. Vitamin E

Code:

- (a) All four
(b) Only three
(c) Only two
(d) Only one

Vitamin

- The word **vitamin** was first used by 'C Funk' in 1911 AD.
- This organic substance is required in small quantities in the human body.

Types of Vitamins: On the basis of solubility, vitamins are divided into two classes -

- **Water soluble vitamins** - Vitamin B and Vitamin C
- **Fat soluble vitamins** - Vitamin A, D, E and K

Additional knowledge:

- '**Vitamin K**' is a fat soluble vitamin which is necessary for the synthesis of certain types of proteins by humans. Due to its deficiency, blood does not clot.
- **Excess glucose** in the body is converted into glycogen and stored in the liver.

19. Match List I (Vitamins) with List II (Chemical names):

List I	List II
A. Vitamin B1	1. Tocopherol
B. Vitamin B3	2. Thiamin
C. Vitamin D	3. Niacin
D. Vitamin E	4. Calciferol

Choose the correct answer from the code given below:

- (a) A-1, B-2, C-4, D-3
(b) A-4, B-3, C-2, D-1
(c) A-2, B-1, C-4, D-3
(d) A-2, B-3, C-4, D-1

19. Answer - (d)

Vitamins and their chemical names

- Vitamin A (Retinol)
- **Vitamin B1 (Thiamine)**
- Vitamin B2 (Riboflavin)
- **Vitamin B3 (Niacin)**
- Vitamin B5 (Pantothenic Acid)
- Vitamin B6 (Pyridoxine)
- Vitamin B7 (Biotin)
- Vitamin B9 (Folate or Folic Acid)
- Vitamin B12 (Cyanocobalamin)
- Vitamin C (Ascorbic Acid)
- **Vitamin D (Calciferol)**
- **Vitamin E (Tocopherol)**
- Vitamin K (Phylloquinone)

Additional Knowledge:

Functions of Vitamins

- They are **essential co-workers** in metabolism.
- They combine **specific proteins** as parts of various oxidative enzymes.
- They are related to the **breakdown of carbohydrates, proteins and fats** in the body.

- They **release energy, carbon dioxide and water** as the end products of metabolism.

20. Consider the following statements with reference to 'Red Blood Corpuscles (RBC)':

1. These are also called leukocytes.
2. These are irregular in shape, have a nucleus and lack haemoglobin.

Which of the above statements is/are correct?

- (a) Both 1 and 2
- (b) Neither 1 nor 2
- (c) Only 2
- (d) Only 1

20. Answer - (b)

Red blood cells (RBC)

- These constitute **99% of the blood cells**. These are also called **erythrocytes**.
- These are **found only in vertebrates**. They contain a protein pigment called **haemoglobin** due to which these cells are **red in colour**.
- Among mammals, the **camel is the only animal** whose **red blood cells have a nucleus**.

Additional knowledge:

White blood cells (WBC)

- These are also called **leukocytes**. These are **irregular in shape, have nucleus** and are **devoid of haemoglobin**.
- Their number is much less than that of red blood cells (RBC).
- The white blood cells which contain granules are called **granulocytes**.
- Granules are not found in the cytoplasm of some white blood cells. These are called **agranulocytes**. These are of two types - **lymphocytes and monocytes**.

Stained platelets or thrombocytes

- These are **found only in the blood of mammals**. Their number is **2 to 5 lakhs per cubic mm of blood**. These help in the formation of **blood clots**.

21. Given below are two statements, one is Statement (A) and the other is Reason (R).

Statement (A): Donors of 'blood group O' are called 'universal donors'.

Reason (R): It does not contain any antibodies and can be transfused to any recipient.

21. Answer - (d)

- The donor of 'blood group O' is called the '**universal donor**' because it **does not have any antigen** and it can be transfused into any recipient.
- '**Blood group AB**' is called the '**universal recipient**' because it **does not have any antibody** and any blood group can be transfused into the body of a recipient with this blood group.

Additional knowledge:

Select the correct answer from the code given below:

- (a) Both A and R are correct but (R) is not the correct explanation of (A).
- (b) A is incorrect but R is correct.
- (c) Both A and R are correct and (R) is the correct explanation of (A).
- (d) A is correct but R is incorrect.

Human blood groups

- **Karl Landsteiner** discovered in **1900** that the blood of all humans is not the same but of different types. The reason for this difference is the presence of a special type of **protein (glycoprotein)** in the red blood cells, which is called **antigen**. Antigens are of two types - (i) **antigen A**, (ii) **antigen B**,
- Based on the presence of glycoproteins in red blood cells, there are **four types of blood groups** in humans -
- **Blood group - antigen - antibody**
- **A** - only A - only b
- **B** - only B - only a
- **AB** - both A and B - absent
- **O** - absent - both a and b

22. Consider the following statements:

1. Plants have a slower respiratory rate than animals.
2. Only the green parts of plants containing chlorophyll respire.

Which of the statements given above is/are correct?

- (a) Neither 1 nor 2
- (b) Only 1
- (c) Only 2
- (d) Both 1 and 2

22. Answer - (b)

Respiration in plants

- Respiration in plants takes place by **diffusion through the body surface by exchange of oxygen and carbon dioxide**.
- Respiration in plants differs from that in animals in **three ways** -
 - The respiration rate of plants is **slower than that of animals**.
 - **All parts** of plants, such as **roots, stems, leaves, respire**.
 - **Transport of gases** from one part of the plant to another is **very less**.

Additional Knowledge:

Plant Physiology

- Plant physiology is a subject of botany in which the **physical structure and functioning of plants are studied**.
- Under this, the basic processes of plants such as **photosynthesis, plant nutrition, respiration, growth, reproduction, functions of plant hormones, tropism, contractile movement, environmental stress, photoperiodism, transpiration and plant-water relations** etc. are studied.

23. Consider the following pairs:

1. Rhizome - Turmeric
2. Stem tuber - Potato

23. Answer - (d)

Transformation of underground stem - Under adverse conditions, underground stems start storing food, due to which they swell and

3. Bulb - Garlic

4. Corm - Ginger

How many of the above pairs are correctly matched?

(a) Two pairs

(b) One pair

(c) Four pairs

(d) Three pairs

become thick and fleshy. These are of the **following types** -

- **Rhizome** - It is a thick, spread underground stem. **Axillary and apical buds** are also found in it. This stem may be **branchless or branched**. Sometimes adventitious roots also develop in it. They have **clear nodes, nodes and scale leaves**. This type of underground stem is found in plants like **turmeric, ginger, banana, fern** etc.
- **Stem tuber** - This is a type of underground stem. It **blooms at the top** due to food storage. There are **many pits on the surface** of this type of stem, which are called **eyes**. Each eye is a **scale leaf**, which indicates the position of the node and there are **dormant buds**. Aerial branches emerge from these dormant buds, at the front end of which there is an apical bud, which grows in favourable conditions and gives birth to a new plant. This type of stem is found in **potatoes**.
- **Bulb** - This type of underground stem is made up of many **small scaly leaves**. These scales become fleshy due to storing water and food. The outer layer of this type of underground stem is **dry**. This stem is found to have **scales arranged in concentric order**. **Onion and garlic** are the best examples of this type of underground stem.
- **Corm** - This type of underground stem is a **condensed form of rhizome**. It **grows vertically** under the ground. A large amount of food gets stored in it. Buds are found in the axil of scales while adventitious roots emerge from its base. This type of underground stem is seen in **Kachalu and Jimikand**.

Additional Knowledge:

- The '**stem**' is that part of the plant which grows away from the ground and water and towards the light. It develops from the **plumule** and bears **branches, leaves, flowers and fruits**.
- **Underground stem** - The part of the stem of a plant which is found inside the ground is called underground stem. **Node joints, leaf buds and scale leaves** are found in the underground stem. Under adverse conditions, the underground stem becomes thick and fleshy due to food storage. For example - **turmeric, ginger, banana, fern, potato, onion, garlic, kachalu, jimikand, arbi** etc.

24. Consider the following statements:

1. Leaves produce food for plants by the process of photosynthesis.
2. Leaves exchange various gases for photosynthesis and respiration.
3. Some leaves help in vegetative reproduction and pollination.
4. Some leaves also perform the function of food storage.

How many of the above statements are correct?

- (a) Only two
- (b) Only three
- (c) All four
- (d) Only one

24. Answer - (c)

Function of leaves

- Leaves produce food for plants through the **process of photosynthesis**.
- Leaves **exchange various gases** for photosynthesis and respiration.
- Leaves **control the process of transpiration**.
- Leaves provide protection to the buds. When they are transformed into thorns, they protect the plants from animals and birds.
- When transformed into fibres, it provides a strong base to weak plants and helps in climbing.
- In **insectivorous plants**, it transforms into a **pitcher, bladder** etc. and helps in **protein-rich nutrition**.
- It helps in the **transfer of water and soluble food materials** from leaves to the stem.
- Some leaves help in **vegetative reproduction and pollination**.
- Some leaves also perform the **function of food storage**.

Additional knowledge:

Functions of root

- It keeps the **plants stable in the soil**.
- Root hairs and soft parts of roots **absorb water and dissolved mineral salts**.
- Roots transport the absorbed water and mineral salts upwards to the stem and leaves.
- Some roots **store food materials** inside them. These stored food materials are used by the plants during adverse conditions.

25. Match List I (Fruits) with List II (Edible parts):

List I	List II
A. Mango	1. Cotyledon and embryo
B. Apple	2. Mesocarp

25. Answer - (b)

Fruit - Edible parts

- Mango - Middle pericarp
- Apple - Pericarp
- Coconut - Endosperm
- Peanut - Cotyledon and embryo
- Pear - Pericarp
- Guava, Grape - Pericarp, Fungi

C. Coconut	3. Receptacle
D. Peanut	4. Endosperm

Select the correct answer from the code given below:

- (a) A-1, B-2, C-3, D-4
 (b) A-2, B-3, C-4, D-1
 (c) A-4, B-3, C-1, D-2
 (d) A-3, B-4, C-2, D-1

- Papaya - Middle pericarp
- Tomato - Pericarp and Fungi
- Banana - Middle and Endocarp
- Wheat - Endosperm and embryo
- Cashew - Pericarp, Cotyledon
- Litchi - Aril
- Gram - Cotyledon and embryo
- Jackfruit - Pericarp and seed
- Pineapple - Pericarp
- Orange - Juicy Hair

Additional Knowledge:

Types of Fruit: There are mainly two types of fruits-

- **True Fruit** - If only the **ovary** takes part in the formation of fruit, then it is called true fruit. For example - **Mango**.
- **False fruit** - Sometimes, other parts of the flower **other than the ovary**, such as the **calyx, sepals** etc. **also participate in the formation of the fruit**. Such fruits are called false fruits. For example, in **apples**, the **thalamus** participates in the formation of the fruit.

Parthenocarpy

- In some plants, the fruit is **formed from the ovary without fertilisation**. The formation of the **ovule takes place**. In this way, the development of the fruit without fertilisation is called **asexual fruiting**. Such fruits are **seedless**. For example - **papaya, orange, grapes, pineapple** etc.

26. Which of the following is the female reproductive part of a flower?

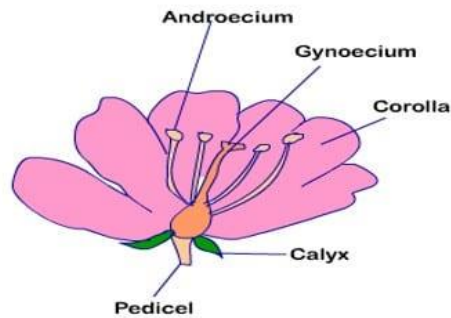
- (a) Calyx
 (b) Corolla
 (c) Androecium
 (d) Gynoecium

26. Answer - (d)

The flower has four main parts -

- Calyx
- Corolla
- Androecium
- Gynoecium

Calyx and corolla are called **auxiliary parts** or unnecessary parts of the flower and **androecium and gynoecium** are called **essential parts** of the flower. **Androecium and gynoecium** are the **actual reproductive parts** of the flower. '**Androecium**' is the **male reproductive part** of the flower and '**Gynoecium**' is the **female reproductive part**.



Additional Knowledge:

Methods of Pollination

- **Anemophilous** - Pollination by wind
- **Chiropterophilous** - Pollination by bats
- **Malacophilous** - Pollination by snails
- **Zoophilous** - Pollination by animals
- **Ornithophilous** - Pollination by birds
- **Hydrophilous** - Pollination by water
- **Entomophilous** - Pollination by insects

27. Which of the following heart valves is present between the left atrium and left ventricle?

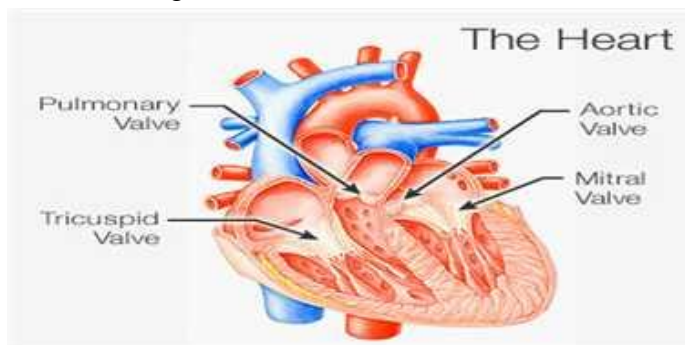
- (a) Aortic valve
- (b) Mitral valve
- (c) Pulmonary valve
- (d) Tricuspid valve

27. Answer - (b)

Heart Valves

Every human heart has **four valves**, which allow **blood to flow in only one direction**.

- **Aortic valve** - It is present between the left ventricle and the aorta.
- **Mitral valve** - It is present between the left atrium and the left ventricle.
- **Pulmonary valve** - It is located between the right ventricle and the pulmonary artery.
- **Tricuspid valve** - It is the valve between the right atrium and the right ventricle.



Additional knowledge:

Lymph

- It is a **colourless fluid** that **does not contain red blood cells and platelets**.
- It contains **less amount of calcium and phosphorus than blood**. Normally, lymphocytes float in it.
- Lymph **contains less amount of nutrients and oxygen than blood**, while carbon dioxide and waste materials are found in relatively more amounts.
- The '**lymphocytes**' present in lymph **protect us from infection by eating and destroying germs like bacteria**. It also **transports nutrients**. It forms the **body's immunity system**.

28. Consider the following statements with reference to typhoid:

1. This disease is caused by a bacterium called '**Salmonella typhosa**'.
2. In this, the spleen and intestinal glands of the patient get enlarged and the patient has high fever.

Which of the above statements is/are correct?

- (a) Only 1
- (b) Neither 1 nor 2
- (c) Both 1 and 2
- (d) Only 2

28. Answer - (c)

Typhoid

- It is caused by a **bacterium called salmonella typhosa**.
- It is also known as **enteric fever**.
- This disease spreads through **dirty water**.
- In this, the **patient's spleen and intestinal glands get enlarged** and the patient has **high fever and persistent headache**.
- **Chloromycetin medicine** is used for its treatment.

Additional knowledge:

- **Athlete's foot** - Known medically as **tinea pedis**, it is a common **skin infection of the feet** caused by a **fungus**. Athlete's foot is caused by several different fungi, including species of **Trichophyton, Epidermophyton and Microsporum**.
- **Chickenpox** - It is a **highly contagious disease** caused by a **microscopic virus**.
- **Pneumonia** - This disease is caused by a **bacterium called Diplococcus pneumoniae**.
- **Dysentery** - This is caused by a **protozoa called Entamoeba histolytica**.

29. How many of the following are 'Protozoa' borne diseases?

1. **Pyorrhea**
2. **Syphilis**

29. Answer - (a)

Disease - Causing bacteria

- **Diphtheria** - **Corynebacterium diphtheria**
- **Syphilis** - **Treponema pallidum**

<p>3. Malaria 4. Diphtheria</p> <p>Code:</p> <p>(a) Only two (b) Only one (c) All four (d) Only three</p>	<p>Disease - Causing protozoa</p> <ul style="list-style-type: none"> Pyorrhea - Entamoeba gingivalis Malaria - Plasmodium <div style="border: 1px solid black; padding: 5px;"> <p>Additional knowledge:</p> <ul style="list-style-type: none"> Disease - Bacteria Tetanus - Clostridium tetani Typhoid - Salmonella typhi Cholera - Vibrio comma Tuberculosis - Mycobacterium tuberculosis </div>
<p>30. Consider the following statements with reference to sleeping sickness:</p> <ol style="list-style-type: none"> It is spread by a protozoa called Leishmania donovani. Its parasite takes shelter in the body of a sand fly. <p>Which of the above statements is/are correct?</p> <p>(a) Only 2 (b) Both 1 and 2 (c) Neither 1 nor 2 (d) Only 1</p>	<p>30. Answer - (c)</p> <p>Sleeping sickness</p> <ul style="list-style-type: none"> This disease is caused by a protozoa called Trypanosoma. Its parasite takes shelter in the body of Tse-Tse Fly. The germs enter the body through the bite of these flies, which causes the lymph glands to swell and physical and mental inactivity occurs, pain and weakness are felt in the body. <div style="border: 1px solid black; padding: 5px;"> <p>Additional knowledge:</p> <p>Kala Azar</p> <ul style="list-style-type: none"> It spreads through a protozoa called Leishmania donovani. The carrier of its parasite is sand fly. In this, the patient gets a high fever. </div>
<p>31. Consider the following statements with reference to the recent developments regarding 'Recombinant Vector Vaccines':</p> <ol style="list-style-type: none"> Genetic engineering is used in the development of these vaccines. In this, bacteria and viruses are used as vectors. <p>Which of the above statements is/are correct?</p> <p>(a) Neither 1 nor 2 (b) Only 1</p>	<p>31. Answer - (c)</p> <ul style="list-style-type: none"> 'Recombinant vector vaccines' are made through genetic engineering. The gene that produces protein for bacteria or viruses is separated and inserted inside the gene of another cell. When that cell reproduces, this vaccine produces protein which means that the immune system will recognize the protein and provide protection to the body from it. Live recombinant bacteria or viral vectors stimulate the immune system as effectively as natural infections and have intrinsic adjuvant properties. They are used as a medium to enter the host organism. <div style="border: 1px solid black; padding: 5px;"> <p>Additional Knowledge:</p> </div>

(c) Both 1 and 2

(d) Only 2

- **CRISPR-Cas9** is a unique technology that enables geneticists and medical researchers to edit parts of the genome by deleting, adding or replacing sections of the DNA sequence.
- CRISPR is an acronym for "**Clustered Regularly Interspaced Short Palindromic Repeats**".
- **Cas9** is basically an **enzyme** that is used like a **pair of scissors** to cut two strands of DNA at a specific location to add, delete or repair bits of DNA.

32. Match List I (Diseases) with List II (Affected Organs):

List I	List II
A. Asthma	1. Brain
B. Diphtheria	2. Bronchial nerve
C. Jaundice	3. Throat
D. Meningitis	4. Liver

Select the correct answer from the code given below:

(a) A-1, B-2, C-3, D-4

(b) A-2, B-3, C-4, D-1

(c) A-4, B-3, C-1, D-2

(d) A-3, B-4, C-2, D-1

32. Answer- (b)

Major diseases of human body and the organs affected by them

Name of disease - Affected organ

- **Asthma** - Bronchial nerve
- **Diabetes** - Pancreas, kidney, eyes
- **Diphtheria** - Throat
- **Leprosy, eczema, ringworm** - Skin, nerves
- **Goiter** - Thyroid gland
- **Jaundice** - Liver
- **Malaria** - Spleen
- **Meningitis** - Brain and spinal cord

Additional knowledge:

- '**Insulin**' is a type of **hormone**. Hormones control the cells of the body and are produced by glands. It is also obtained from the roots of dahlia.
- Insulin hormone mainly controls the level of glucose (sugar) in the blood.
- Insulin is produced in the pancreas in the human body.

33. Which of the following is/are 'deficiency diseases'?

1. Rickets
2. Colour blindness
3. Pellagra
4. Haemophilia

Codes:

(a) 1 and 3 only

33. Answer - (a)

- **Deficient diseases** - These are caused by the destruction of various body organs, such as - **heart disease**
- **Deficiency diseases** - These are caused by the deficiency of various substances, such as - **rickets, marasmus, pellagra** etc.
- **Genetic diseases** - These are caused due to genetic factors, such as **colour blindness, haemophilia** etc.

- (b) 1, 2 and 3 only
(c) 1, 3 and 4 only
(d) 3 and 4 only

Additional knowledge:

- The **enzyme pepsin** digests proteins in the stomach, while **renin** converts the dissolved protein caseinogen of milk into the solid protein **calcium paracaseinate** and **trypsin** converts proteins and peptones into **polypeptides and amino acids**.
- A protein called **heparin** is produced by the liver itself, which prevents blood from clotting inside the body.

34. Match List I (Diseases) with List II (Factors):

List I	List II
A. Peptic ulcer	1. Virus
B. AIDS	2. Worms
C. Elephantiasis	3. Protozoa
D. Kala Azar	4. Bacteria

Choose the correct answer from the codes given below:

- (a) A-3, B-1, C-2, D-4
(b) A-4, B-1, C-2, D-3
(c) A-3, B-2, C-1, D-4
(d) A-4, B-2, C-1, D-3

34. Answer - (b)

- 'Peptic ulcer' is caused by a **bacteria** called **Helicobacter pylori**. Robin Byrne and Barry Marshall were awarded the **Nobel Prize for Physiology and Medicine** in 2005 for their research related to its treatment. **Typhoid, cholera, anthrax and acne** are some other diseases caused by **bacteria**.
- Dengue, cough and cold, influenza and AIDS** are diseases caused by **viruses**.
- The disease called **elephantiasis** is caused by various species of **worms**.
- Common skin diseases** are caused by various types of **fungi**.
- Malaria, Kala-azar (from Leishmania protozoa) and sleeping sickness (from Trypanosoma protozoa)** are diseases caused by **protozoa**.

Additional knowledge:

- Bacterial diseases** - Tetanus, syphilis, cholera, diphtheria, whooping cough, plague, pneumonia, tuberculosis, typhoid, cholera etc.
- Viral diseases** - Rabies, smallpox, chickenpox, measles, polio, hepatitis, AIDS, Ebola, dengue, rubella etc.
- Protozoa diseases** - Malaria, dysentery, pyorrhea, kala-azar, sleeping sickness etc.
- Worm-borne disease** - Filariasis

35. Consider the following pairs:

- Vitamin B1 Deficiency - Kilois
- Vitamin D deficiency - Rickets

35. Answer - (c)

- Vitamin B1 (Thymine)** - The chemical name of this vitamin is thiamine. It is **water soluble**. Its deficiency in the human body causes a disease called **Beri-Beri**.
- Vitamin C (Ascorbic acid)** - The chemical name of this vitamin

3. Vitamin C deficiency -
Scurvy

4. Vitamin B2 deficiency -
Beriberi

How many of the above pairs are correctly matched?

- (a) One pair
- (b) Three pairs
- (c) Two pairs
- (d) Four pairs

is ascorbic acid. Its chemical formula is **C₆H₈O₆**. It is a **water soluble vitamin**. Deficiency of this vitamin in the human body causes a disease called **scurvy**.

- **Vitamin D (Calciferol)** - The chemical name of this vitamin is calciferol. It is a **fat soluble vitamin**. This vitamin helps in **strengthening the bones**. It helps in keeping the **body of the child growing in the womb healthy**. Its deficiency in the human body causes a disease called **rickets in children** and **osteomalacia in adults**.
- **Vitamin B2 (Riboflavin)** - The chemical name of this vitamin is riboflavin. It is a **water soluble vitamin**. It takes part in the **metabolism of carbohydrates** and other substances. Its deficiency causes a disease called **cheilosis**.

Additional knowledge:

Vitamin E (Tocopherol)

- The chemical name of this vitamin is **tocopherol**.
- It is a **fat soluble vitamin**.
- This vitamin is also called '**reproductive vitamin**' because it is essential for reproductive activities. In **its absence**, a **man becomes impotent** and his reproductive power is weakened.
- It is found in sufficient quantities in sprouted grains like **wheat, gram, peas, green leafy vegetables and meat**.
- **Citrus juicy fruits** (lemon, orange, orange, etc.), **chikri, amla, tomato, leafy vegetables, sprouted grains etc.** are the **main sources of 'vitamin C'**.

36. Given below are two statements, one is Statement (A) and the other is Reason (R).

Statement (A): Making antiviral medicine is more difficult than making antibacterial medicine.

Reason (R): 'Viruses' enter our body and use our machinery for their life process.

Select the correct answer from the code given below:

36. Answer – (d)

- **Bacteria have their own biochemical system** whereas viruses have very little of their own biochemical system. Hence 'viruses' enter our body and use our machinery for their life process. That is why making antiviral medicine is more difficult than making antibacterial medicine. **So both A and R are correct and the correct explanation of (A) is (R).**
- **Edward Jenner** discovered that the **smallpox virus** is a **close relative of the cowpox virus**. He observed that people who had cowpox did not get smallpox even during the pandemic. Since cowpox is a mild disease, Edward Jenner deliberately gave

(a) Both A and R are correct but (R) is not the correct explanation of (A).

(b) A is false, but R is true.

(c) A is true, but R is false.

(d) Both A and R are correct and (R) is the correct explanation of (A).

cowpox to people and found that they too were now immune to smallpox. In this process, **Jenner discovered the smallpox vaccine.**

Additional Knowledge:

- In **HIV infection**, the virus enters the immune system and destroys its function. Thus, many of the effects of HIV-AIDS occur because our body is unable to fight off small infections that occur every day.
- The **immune system** fights and eliminates diseases that enter the body, so serious infectious diseases indicate that the immune system is failing to fight diseases. Adequate food and nutrition are necessary to keep the immune system strong.
- The **general rule of vaccination** is that the **immune system can be 'fooled' by introducing a specific infection into the body.** This happens because when germs attack the immune system for the first time, the immune system reacts to the germs and then remembers it specifically. Thus, when the same germ or a similar germ comes in contact, it destroys it with full force. This leads to the second infection ending more quickly than the first infection.

37. Match List I with List II:

List I	List II
A. Minamata	1. Mercury poisoning
B. Blackfoot	2. Arsenic poisoning
C. Blue baby syndrome	3. Nitrate poisoning
D. Itai-itai	4. Cadmium poisoning

Select the correct answer from the code given below:

37. Answer - (a)

Element - Disease

- Mercury poisoning - Minamata
- Arsenic poisoning - Blackfoot
- Nitrate poisoning - Blue baby syndrome
- Cadmium poisoning - Itai-itai

Additional knowledge:

- **Antibiotics** usually block important biochemical pathways of bacteria. Example - **Many bacteria make cell walls to protect themselves. Penicillin** disrupts this process due to which they are unable to make cell walls and die easily. Human cells do not have cell walls, so penicillin does not affect them.
- **Viruses do not have any pathway** like bacteria, which when blocked can cause their death. Hence, **no antibiotic is effective on virus infection.**

- (a) A-1, B-2, C-3, D-4
 (b) A-2, B-3, C-4, D-1
 (c) A-4, B-3, C-1, D-2
 (d) A-3, B-4, C-2, D-1

38. Consider the following pairs:

Taste-causing chemicals

1. Bitterness in almonds - Amygdalin
2. Pungency in chillies - Capsaicin
3. Pungency in radish - Isocyanate
4. Pungency in turnips - Calcium oxalate

How many of the above pairs are correctly matched?

- (a) Two pairs
 (b) Four pairs
 (c) Three pairs
 (d) One pair

38. Answer - (b)

Taste - Factor Chemicals

- Bitterness in almonds - Amyladin
- Pungency in chillies - Capsaicin
- Pungency in radish - Isocyanate
- Pungency in turnips - Calcium oxalate

Additional Knowledge:

Colour - Pigment

- Red colour of apple - **Anthocyanin**
- Red colour of tomato - **Lycopene**
- Yellow colour of papaya - **Xanthophyll**
- Green colour of potato - **Solanine**

39. How many of the following are 'genetic diseases'?

1. Haemophilia
2. Plague
3. Pneumonia
4. Thalassemia

Code:

- (a) Only one
 (b) Only three
 (c) Only two
 (d) All four

39. Answer - (c)

- Haemophilia, thalassemia and sickle cell anaemia etc. are 'genetic diseases'.
- Pneumonia is an infection in the lungs caused by bacteria, virus or fungus.
- Plague is a contagious disease which is spread by a bacterium called **Bacillus pestis**.
- Influenza is an infectious disease caused by a germ called **Influenzae**.

Additional Knowledge:

Huntington Disease (HD)

- This is a **genetic disorder affecting the brain**.
- This disease is **caused by a mutation in a gene called 'HTT'**. HTT genes participate in the formation of a protein called Huntington. The function of HTT genes is to give instructions for protein formation.

- Mutation in the HTT gene hinders the ability of these genes to give instructions and this leads to the formation of **faulty proteins**.
- Faulty proteins, also called **clumps**, disrupt the normal functioning of brain cells. Ultimately the neurons of the brain die and these faulty proteins cause **Huntington disease**.
- This disease causes loss of control over the body and a **decline in cognitive ability**.
- Apart from this, symptoms like **difficulty in concentrating, memory loss, mood swings, personality changes**, etc. are observed.

40. According to the World Health Organisation (WHO), bats can be carriers of which of the following diseases?

1. Ebola
2. Rabies
3. Polio

Code:

- (a) Only 1 and 2
(b) 1, 2 and 3
(c) Only 1 and 3
(d) Only 2 and 3

40. Answer - (a)

- According to the World Health Organization (WHO), bats are often carriers of Ebola, Rabies, Marburg and SARS coronaviruses.

Additional Knowledge:

Polio (Poliomyelitis)

- 'Polio' or poliomyelitis is an **infectious viral disease** that affects the **central nervous system** and can cause **temporary or permanent paralysis**.
- It is known that poliomyelitis comes from a **Greek word polio** which means '**brown**', mylios means spinal cord and itis means inflammation.
- This disease **mainly affects children aged one to five years**, because their immunity is not fully developed.
- It is known that the **first polio vaccine** was developed by '**Jonas Salk**'.
- It is a great achievement for India that the **World Health Organization declared India, including South-East Asia, polio-free in the year 2014**.
- Despite being polio-free, Indian policymakers are still very cautious about polio, as there is a threat of the poliovirus returning to India.