

## MODULE – 5 & 6

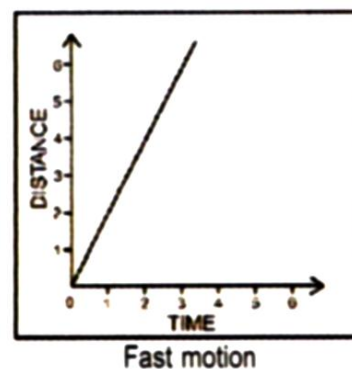
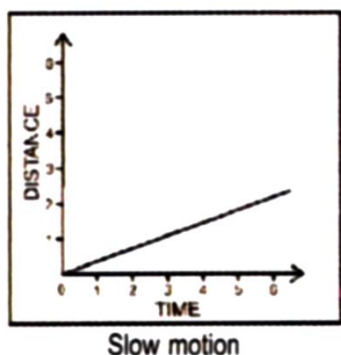
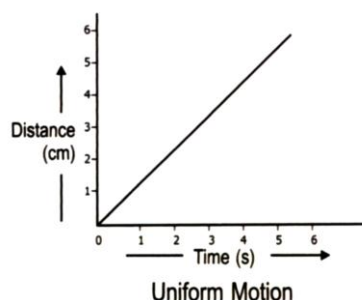
### TUTORIAL MOTION AND TIME

A body is said to be at **rest** if it does not change its position wrt its surroundings with the passage of time.

A body is said to be in **motion** if it changes its position or direction wrt its surroundings with the period of time.

**Speed:** - Distances covered by a body in a unit time is speed. Its SI unit is m/s.

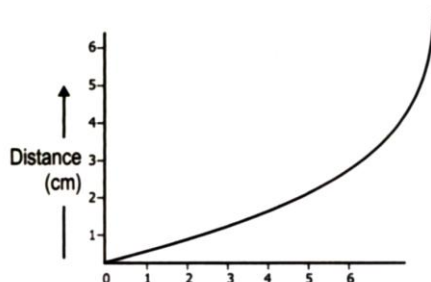
**Uniform Motion:** - When an object covers the same distance in each unit of time, it is said to be moving with the constant speed or in uniform motion.



The graph of uniform motion will have the following characteristics: -

- Motion is represented by a straight line.
- The steeper the line, the greater the speed.

**Non-Uniform Motion:** - If a body covers unequal distance in equal intervals of time, it is said to be in non-uniform motion. E.g. Movement of child on road, movement of a butterfly.



### Simple Pendulum

A pendulum consists of a small mass, suspended from a fixed point and allowed to swing freely under the influence of gravity. The small mass may be a small metallic ball or even a stone. It is called bob.

The movement of the bob from one end, swinging till other end to come back to its original position comprises one oscillation.

The time taken to complete one oscillation is called the time period of pendulum.

**Mean Position:** -The position of the bob in which it is at rest is called the mean position.

**Amplitude:** - The distance between maximum displacement of bob on either side from its mean position is amplitude.

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### MODULE – 5 & 6

#### Assignment

I. Fill in the blanks:

- (i) The earliest methods of measuring time were based on \_\_\_\_\_ of events.
- (ii) \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ were the main methods in early time to measure the time.
- (iii) There are \_\_\_\_\_ seconds in an hour.
- (iv) We use the idea of speed to distinguish between \_\_\_\_\_ and \_\_\_\_\_ objects.

- (v) SI unit of speed is \_\_\_\_\_ & of time is \_\_\_\_\_.
- (vi) The graph plotted between distance and time for the uniform motion is always in \_\_\_\_\_.
- (vii) \_\_\_\_\_ clock is the most accurate clock.
- (viii) 1 Km/ hr = \_\_\_\_\_ m/ sec.

II. State true or false:

- (i) In non-uniform motion, the speed of an object changes for every equal intervals of time.
- (ii) Time =  $\frac{\text{Distance}}{\text{Speed}}$
- (iii) Cars always move with uniform motion.
- (iv) Time period of a pendulum depends on the weight of the bob.
- (v) Motion of pendulum is non uniform motion.

III. Answer in one words:

- (i) The resting position of the bob of pendulum.
- (ii) Device fixed in vehicles which shows its speed.
- (iii) Time taken for pendulum to complete one oscillation.
- (iv) Total distance covered by body in unit time.
- (v) To & fro motion of the bob about its mean position.

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## **MODULE – 7**

I Give one–one example of the following –

- (i) Uniform and Non uniform motion
- (ii) Periodic & Non periodic motion
- (iii) Oscillatory motion

II Plot the graph for following –

- (i) A body at rest.
- (ii) A bus moving with uniform speed.
- (iii) If a body covers unequal distances in equal interval of time.

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### **QUESTION BANK**

- I. Define:
- |             |                      |
|-------------|----------------------|
| (i) Rest    | (iii) Uniform motion |
| (ii) Motion | (iv) Non- uniform    |
- II. What is speed? What is its SI unit?
- III. Calculate the speed of body which covers a distance of 900 km in 5 hrs.
- IV. Convert:
- |                       |                          |
|-----------------------|--------------------------|
| (i) 50 m/s into km/h  | (iii) 108 km/hr into m/s |
| (ii) 20 m/s into km/h | (iv) 26 km/h into m/s    |
- V. A body covers a distance of 4 km in 5 mins. Calculate his speed in km/hr.
- VI. A motorist covers a distance of 3 km in 6min. Calculate speed in
- |           |  |
|-----------|--|
| (i) m/s   |  |
| (ii) cm/s |  |
- VII. Light travels with a speed of  $3 \times 10^8$  m/sec. How long does the light take from the sun which is  $15 \times 10^{11}$  m away?
- VIII. Solve the following numerical:
- (i) A car takes 20 minutes to cover a distance of 15 km. Calculate the speed in km/hr.
  - (ii) I went from my house to the playground 300 m away in 10 minutes. I ran back and reached in two minutes. What was my average speed?
  - (iii) Rajdhani express takes 3 hrs to cover 315 km. Shatabdi express takes 6 hours to cover the distance of 600 km. Find the speed of both the express trains. Which express train will cover the distance of 400 km in less time?
  - (iv) The odometer of can reads 10532.0 km at the start of journey and at end it reads 10850.0 km. If car takes 12 hour to complete its journey. Then calculate its average speed in km/hr, km/min and km/s.
  - (v) If a pendulum completes 10 oscillations in one second, what will be the time period of pendulum?
  - (vi) Calculate time period of a body if it covers 40 oscillations in 20 seconds.
- IX. Define:
- |                        |                     |
|------------------------|---------------------|
| (i) Oscillatory motion | (v) One oscillation |
| (ii) Simple pendulum   | (vi) Time period    |
| (iii) Mean position    | (vii) Frequency     |
| (iv) Amplitude         |                     |

- X. Calculate time period of a body if it covers 40 oscillations in 20 seconds.
- XI. A simple pendulum take 32 seconds for completing 20 oscillations. Calculate its time period.
- XII. If a pendulum completes 10 oscillations in one second, what will be the time period of pendulum?
- XIII. Define graph for uniform and non- uniform motion.
- XIV. Plot the distance time graph for an electronic toy train

|              |   |    |    |    |
|--------------|---|----|----|----|
| Distance (m) | 5 | 10 | 15 | 20 |
| Time (s)     | 1 | 2  | 3  | 4  |

- XV. A small kid is riding a bicycle in a park. Plot the observation of distance travelled by child's cycle.

|              |          |
|--------------|----------|
| Distance (m) | Time (s) |
| 5            | 10       |
| 7            | 20       |
| 10           | 30       |
| 6            | 40       |

- XVI. Plot a distance time graph for a body moving a uniform speed of 2 m/s.

| Distance (m) | Time (s) | Speed (m/s)        |
|--------------|----------|--------------------|
| 2            | 1        | 2                  |
| 4            | 2        | $\frac{4}{2} = 2$  |
| 6            | 3        | $\frac{6}{3} = 2$  |
| 8            | 4        | $\frac{8}{4} = 2$  |
| 10           | 5        | $\frac{10}{5} = 2$ |

- XVII. Plot the graph between distance and time using the following data and answer the followed questions:

- a. What is the type of motion?
- b. What is the speed of the car when Time = 9 hours and Distance = 90 km?
- c. Is the speed of the car constant?

| Time(hrs) | Distance(Km) |
|-----------|--------------|
| 1         | 10           |
| 2         | 20           |
| 3         | 30           |
| 4         | 40           |
| 5         | 50           |

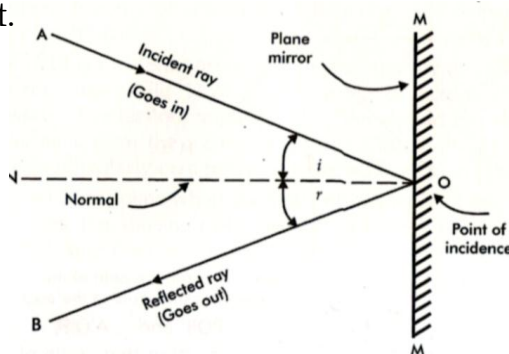
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## MODULE – 8

### TUTORIAL LIGHT

**Reflection:** - The bouncing back of light when it falls on a shiny or polished surface is called reflection of light.

#### **Laws of reflection**



The two laws of reflection of light are:-

1. The incident ray, the reflected ray and the normal, all lie on same plane at the point of incidence.
2. The angle of incidence is always equal to angle of reflection.

#### **Real and Virtual Images**

**Real Images:** - The image which can be obtained on a screen is called real image. It is formed when at least two rays coming from the object actually meet at a point after reflection from the mirror.

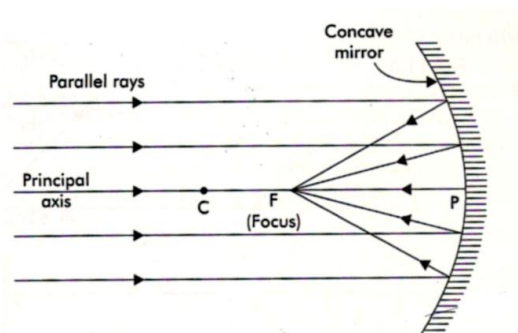
**Virtual Images:** - The image which cannot be obtained on a screen is called virtual image. It cannot be obtained on screen. They are unreal because they do not exist in reality.

**Lateral Inversion:** - When an object is placed in front of a plane mirror then right side of object appears to become left side of image and left side of object appears to become right side of image. This change of side of an object in its mirror image that is called lateral inversion.

**Properties of an image formed by plane mirror are: -**

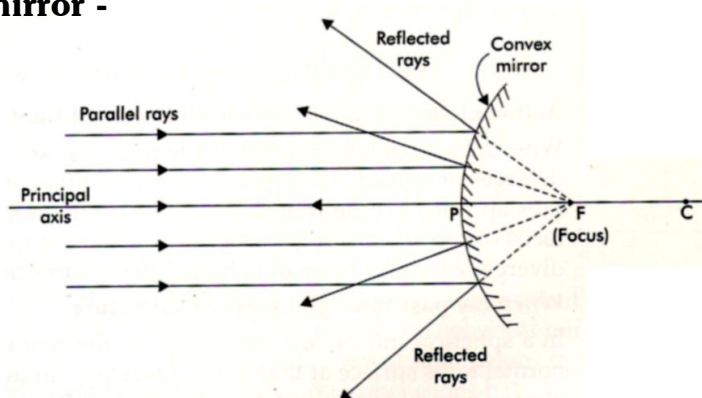
1. It always forms virtual and erect image.
2. It is of same size as the object
3. It is formed as far behind the mirror as the object is in front of it.
4. It is laterally inverted.

**Converging nature of concave mirror –**



In concave mirror, parallel rays of light actually meet or converge after reflection from the mirror. Hence concave mirror is called converging mirror and that point on the principal axis is called focus.

**Diverging nature of convex mirror -**



In convex mirror, parallel rays of light seem to diverge after reflection from the mirror. Hence convex mirror is also called diverging mirror.

**Some important points:-**

1. Concave mirror forms real and inverted image of object, when it is kept beyond focus.
2. Concave mirror forms virtual, erect and magnified image of object, when it is kept between the mirror and focus.
3. Concave lens always form virtual and smaller image.
4. Convex lens form real and inverted image when kept beyond focus. When it is placed very close to the lens the image is virtual, erect and magnified.

5. The splitting of light into seven colours is called dispersion of light and the band we get as a result of dispersion is called spectrum.

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## **MODULE – 8**

### **Assignment**

- I. Fill in the blanks

- (i) The direction of the path in which light is travelling is called a \_\_\_\_\_.
- (ii) The stream of light formed by a number of rays is called \_\_\_\_\_.
- (iii) A plane mirror \_\_\_\_\_ all light falling on it.
- (iv) A plane mirror forms \_\_\_\_\_ image.
- (v) Speed of light in vacuum is \_\_\_\_\_.

- II. Answer in one word:

- (i) The phenomenon of light travelling in a straight line.
- (ii) An image that can be obtained on-screen.
- (iii) A beam of light which comes from a broad source of light & converge at a point.

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## **MODULE – 9**

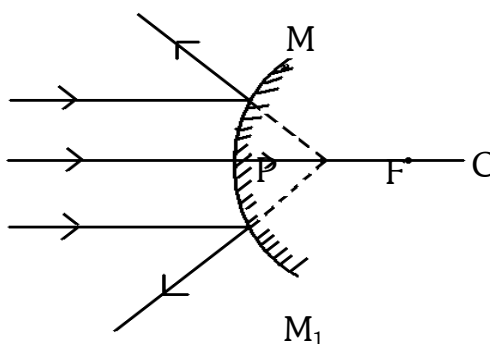
- I. Fill in the blanks:

- (i) A \_\_\_\_\_ mirror forms enlarged image.
- (ii) \_\_\_\_\_ is used as rear view mirror in cars.
- (iii) When we polish a spherical surface on the \_\_\_\_\_ side we get a convex mirror.
- (iv) In car head lights, we use \_\_\_\_\_ mirrors.
- (v) Image formed in convex mirror is always \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_ in size.

- II. Answer the following questions:

- (i) Doctors sometimes use a mirror on their foreheads to examine the internal parts of the ear, nose, throat etc. What type of mirror is it?
- (ii) Mention two uses of
  - (a) Concave mirror
  - (b) Convex mirror
  - (c) Plane mirror
- (iii) Which mirror / mirrors always form virtual image?

III. Observe the given diagram and answer the followed questions:



- (i) What does the following points represent in the above diagram?  
 (a) P (b) F (c) C
- (ii) What type of mirror is used in the above diagram?
- (iii) What kind of image is being formed and where?

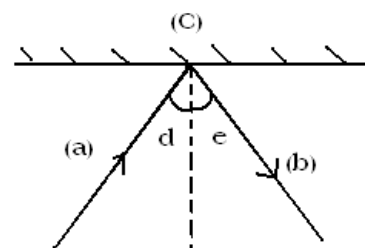
IV. Correct the following statements-

- (i) A convex mirror gives only real images.
- (ii) Image formed by convex mirror is of same size as that of object.

### EXTRA QUESTIONS

I. Label the figure and answer the following questions:

- (i) Identify and define a, b, c, d and e.
- (ii) What is reflection?
- (iii) What are the laws of reflection?



II. Give reasons:

- (i) In medical vans used to transport patients to hospital, has words 'AMBULANCE' in scripted on it. Why?
- (ii) We can see light through a straight tube but not through a bent tube. Why?

III. Draw a ray diagram to show reflection through concave mirror.

IV. Give reason –

- (i) Why do we prefer convex mirror as a rear-view mirror?
- (ii) Concave mirrors are used for shaving purpose.

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**MODULE – 10**

***REVISION MODULE***

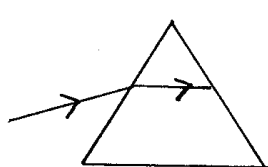
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**MODULE – 11 & 12**

- I. State true or false:
- (i) Convex mirrors are used in spectacles.
  - (ii) Convex lens is also called magnifying glass.
  - (iii) Image formed by concave lens is always virtual, erect & smaller in size.
- II. Correct the following statements:
- (i) Mixing of colours of rainbow give black colour.
  - (ii) White light is a composition of 10 colours.
  - (iii) Convex lens is called diverging lens.
  - (iv) Magnifying glass is made up of concave lenses.
- III. Fill in the blanks-
- (i) Concave lenses are also called\_\_\_\_\_.
  - (ii) The band of seven colours obtained as a result of dispersion is known as \_\_\_\_\_.
  - (iii) During rainbow formation, \_\_\_\_\_act like small prisms.
- IV. Answer in one word
- (i) Phenomenon of breaking of white light into spectrum.
  - (ii) A mechanical arrangement used to demonstrate the composition of white light.
  - (iii) A transparent glass piece thinner in the middle and thicker at the edges.
  - (iv) The phenomenon of bouncing back of light.
  - (v) An image that can be obtained on a screen.
  - (vi) Absence of all colours of light.
- V. Which mirror will be used for following purpose?
- (i) For getting virtual and larger image.
  - (ii) For getting real image.
  - (iii) For getting virtual image of same size.
  - (iv) For getting virtual image of smaller size.

### **EXTRA QUESTIONS**

- I. Give differences between:
- (i) Concave lens and convex lens
  - (ii) Lens and mirrors
- II. Give reasons:
- (i) Concave lenses are called diverging lenses. Why?
  - (ii) Magnifying glass burns the paper if put it in the path of sun rays. Why?
- III. Answer the following questions:
- (i) What are the characteristics of image formed by convex mirrors?
  - (ii) In a concave mirror what will be the size and its nature of image formed, if the object is placed near (5cm) the mirror?
- IV. Draw a ray diagram to show refraction through convex lens.
- V. Answer the following questions:
- (i) What are the characteristics of image formed by concave lens?
  - (ii) How will you identify if you are provided with a plane mirror, concave mirror and convex mirror?
  - (iii) What does 'VIBGYOR' stand for?
- VI. Complete the diagram to show dispersion of light through a prism.



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### **QUESTION BANK**

- I. Define:
- a. Ray
  - b. Beam
  - c. Parallel beam of light
  - d. Convergent beam of light
  - e. Divergent beam of light
- II. Define:
- a. Incident ray
  - b. Reflected ray
  - c. Normal

- d. Point of incidence
  - e. Angle of incidence
  - f. Angle of reflection
- III. State laws of reflection.
- IV. Differentiate between real image and virtual image.
- V. What are the properties of image formed by a plane mirror?
- VI. Define lateral inversion.
- VII. What are uses of plane mirror?
- VIII. If an object is placed at a distance of 5m away from a plane mirror. After sometime it moves 2 m towards the mirror. What will be the distance between object and image now?
- IX. Define:
- a. Spherical mirrors
  - b. Concave mirrors
  - c. Convex mirrors
- X. Define some important terms related to spherical mirrors:
- a. Pole (P)
  - b. Centre of curvature (C)
  - c. Radius of curvature (R)
  - d. Principal axis
- XI. Explain converging nature of concave mirror.
- XII. Explain diverging nature of convex mirror.
- XIII. What are the uses of concave mirror and convex mirror.
- XIV. Define:
- a. Lenses
  - b. Concave lens
  - c. Convex lens
- XV. Define the terms related to lens:
- a. Optical centre
  - b. Principal axis
- XVI. Explain:
- a. Converging nature of convex lens
  - b. Diverging nature of concave lens
- XVII. What are uses of concave lens and convex lens?

- XVIII. Define:
- Dispersion of light
  - Spectrum
- XIX. What is a rainbow? How is it formed?
- XX. Write an activity to recombine seven colours again into white light.

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## **MODULE – 13**

### **TUTORIAL**

#### **Electric Current and its Effects**

**Electric current** is the amount of charge which passes a particular point in a particular time. The S I unit of charge is **coulomb** while the unit of current is **Ampere**. The conventional direction of current is from positive to the negative terminal in a closed circuit.

#### **The heating effect in a wire depends upon**

- Length of the wire
- Thickness of the wire
- Material of which the wire is made

**Electromagnets** are temporary magnets which work on the magnetic effect of electric current.


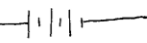


#### **The strength of an electromagnet depends on-**

- The amount of current flowing through the coil
- Number of turns of the wire
- Length of iron rod

#### **I. Fill in the blanks :**

- The electric circuit consists of \_\_\_\_\_ or \_\_\_\_\_ as its essential part.
- Electric circuit is a \_\_\_\_\_ path along which electric current flows.
- \_\_\_\_\_ is the symbol for 'SWITCH OFF' in the electric circuit.

#### **II. Match the following electric components with their symbols.**

A	B
1. Battery	(a) 
2. Blown fuse	(b) 
3. Resistor	(c) 
4. Connecting wire	(d) 

III. Give short answers for the following questions

- (i) What is an electric current?
- (ii) What is the unit of current?
- (iii) What is battery?
- (iv) What is the filament the bulb made up of?

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### **MODULE – 14**

I. Fill in the blanks.

- (i) A fuse wire is used to \_\_\_\_\_ electrical appliance.
- (ii) \_\_\_\_\_ behaves like magnet when current is passed through it.
- (iii) The current can make \_\_\_\_\_ as well as \_\_\_\_\_ magnets.
- (iv) \_\_\_\_\_ was the first person to notice deflection in Compass needle when electric current was passed through it.
- (v) Fuse wire and heater work on \_\_\_\_\_ of electric current.
- (vi) Amount of heat produced in the circuit depends upon the amount of the \_\_\_\_\_ & amount of \_\_\_\_\_, for which it flows.

II. Match the following –

- | A                               | B                              |
|---------------------------------|--------------------------------|
| (i) Electric fuse               | (a) Closed circuit             |
| (ii) Electro magnets            | (b) Battery                    |
| (iii) Source of electric energy | (c) Heating effect of current  |
| (iv) Switch                     | (d) Magnetic effect of current |

### **MODULE – 15**

I. Fill in the blanks-

- (i) Under normal conditions a magnetic compass needle always comes to rest in \_\_\_\_\_ direction.
- (ii) The melting point of a fuse is \_\_\_\_\_ than the melting point of remaining circuit.

II. State True or False –

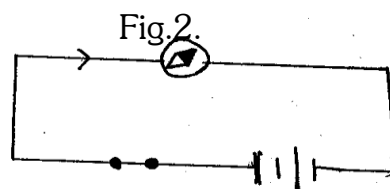
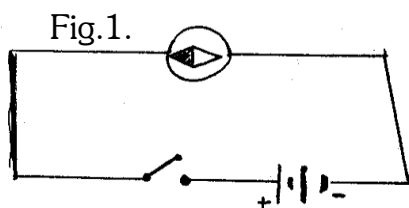
- (i) An electric bell makes use of electromagnet.
- (ii) MCB is a form of fuse.
- (iii) A closely wound length of wire is called fuse.
- (iv) Electromagnet uses heating effect of electric current.

- (v) A good fuse is that which will not melt, even when current crosses its limit.

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**EXTRA QUESTIONS**

- I. Give reasons  
If the filament of the bulb is broken, will the bulb still glow? If yes/no then, why?
- II. (i) Draw the figure for the following electric components.
- |                         |                   |
|-------------------------|-------------------|
| a) Electric bulbs       | (c) Closed switch |
| b) A battery of 3 cells | (d) Fuse          |
- (ii) Draw a circuit diagram required to light a bulb using a battery of four cells, in working condition.
- III. Give short answers to the following question.
- Give names of two devices based on heating effect of current.
  - What are the uses of electromagnets?
  - What is MCB? Why and where are they used?
  - What kind of wire is used to make electric fuse?
  - Name the wire used for making filaments of heater.

- IV. Observe the given figures and answer the following questions:



- What is the aim of the experiment?
  - What is the difference in figure 1 and figure 2?
  - What type of electric effect is being produced in figure 2?
- IV. Answer the following questions-
- Why can't copper wire be used as a fuse wire?
  - Electromagnets are used for transporting heavy iron machinery in Industries. Why are the permanent magnets not used for this purpose?
- =====

### **QUESTION BANK**

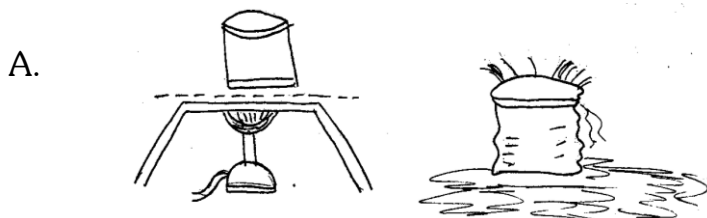
- I. Define electric current.
  - II. Explain basic parts of an electrical circuit.
  - III. What are the symbols of different electrical components?
  - IV. What are the different effects produced by an electric current?
  - V. What is heating effect of electric current? On what factors heat produced in wire depends?
  - VI. Name a few safety devices of electric circuit and explain them.
  - VII. What is magnetic effect of electric current? Write an activity to show magnetic effect of electric current.
  - VIII. What do you mean by an electromagnet? List the factors on which its strength depends upon?
  - IX. What are the uses of electromagnets?
  - X. Describe the structure and working of an electric bell.
- =====

### **MODULE – 16 & 17**

- I. Correct the following statements:
    - (i) Air exerts pressure only in upward direction.
    - (ii) The strong moving air is called wind
  - II. Fill in the blanks:
    - (i) The movement of air takes place due to \_\_\_\_\_.
    - (ii) Moisture – laden winds are called \_\_\_\_\_ winds.
    - (iii) Cyclones are known as \_\_\_\_\_ in Japan.
    - (iv) The centre of the cyclone is cloudless calm area called the \_\_\_\_\_.
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### **IMPORTANT QUESTIONS**

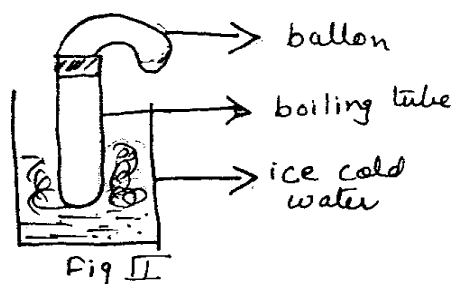
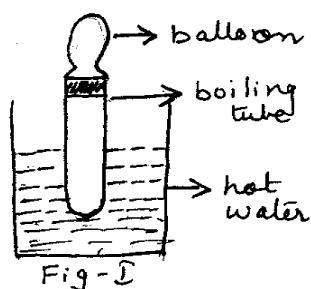
- I. Observe the figure and answer the given questions:



- (i) What is the aim of the experiment?

- (ii) Why does the shape of the hot bottle distort when you put cold water on it?

B. 1



- (i) What is the aim of the experiment?  
(ii) What does the shape of balloon indicate in the figure II?

II. Draw a diagram to show 'hot air rises up'. Give reason for the rising of hot air.

IV. Answers the following questions:

- (i) What is thunderstorm?  
(ii) What is a cyclone?  
(iii) What are the other names of cyclone?  
(iv) What are tornadoes?  
(v) Write three effective safety measures for the cyclone.

V. Application based questions: -

- (i) Does air pressure help the birds to fly? How?  
(ii) Aeroplanes do not flap their wings like birds. How do they lift up?  
(iii) How does vacuum cleaner work?

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### **QUESTION BANK**

I. With the help of activity explain:

- High speed wind reduces air pressure.
- Air exerts pressure.
- Air expands on heating.
- Hot air rises up.

II. What are monsoon winds?

III. What is thunderstorm? How is it caused? What precaution must be taken during a thunderstorm?

IV. Explain how does a thunderstorm become a cyclone.

V. List the safety measures that must be taken against cyclone.

VI. Define:

- |                   |               |
|-------------------|---------------|
| a. Tornado        | c. Hurricanes |
| b. Eye of cyclone | d. Typhoons   |

VII. Explain why holes are made in hanging banners and hoardings?

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**MODULE – 18**

***Revision Module***

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## **CHEMISTRY**

### **MODULE – 1**

#### **UNIT-I: ACIDS, BASES AND SALTS**

##### ***Contents***

- Acids
  - Bases
  - Acidic substances
  - Basic substances
- ~~~~~

### **MODULE – 2**

#### **UNIT-I: ACID, BASES AND SALTS .**

##### ***Contents***

- Natural indicators
  - Artificial indicators
  - Acid Rain
- ~~~~~

### **MODULE – 3**

#### **UNIT-I: ACID, BASES AND SALTS**

##### ***Contents***

- Neutralization
  - Indigestion
  - Ant sting
  - Soil treatment
- ~~~~~

### **MODULE – 4**

#### **UNIT-II: FIBER TO FABRIC**

##### ***Contents:***

- Plant fibre and Animal fibre
  - Animals that yield wool
  - Rearing and Breeding of sheep
- ~~~~~

### **MODULE – 5**

#### **UNIT-II: FIBER TO FABRIC**

##### ***Contents:***

- Processing fibres into wool
  - Occupational hazards
- ~~~~~

## MODULE – 6

### UNIT-II: FIBER TO FABRIC

#### **Contents:**

- Life cycle of silk moth
- Processing silk
- Refining silk

## MODULE – 7

### WATER : A PRECIOUS RESOURCE

#### **Contents:**

- Water Day
- Availability of water
- Forms of Water
- Water cycle

## MODULE – 8

### WATER : A PRECIOUS RESOURCE

#### **Contents:**

- Ground water
- Distribution of water table
- Depletion of water table

## MODULE – 9

### WATER : A PRECIOUS RESOURCE

#### **Contents:**

- Water management
- Water harvesting
- Water wise habits
- Effects of water scarcity on plants

## MODULE – 10

### *Revision for Half Yearly*

## **MODULE – 11**

### **PHYSICAL AND CHEMICAL CHANGES**

#### **Contents:**

- Introduction.
  - Examples of physical change.
  - Freezing mixture.
- ~~~~~

## **MODULE – 12**

### **PHYSICAL AND CHEMICAL CHANGES**

#### **Contents**

- Chemical change.
  - Chemical reaction.
  - Chemical equation.
- ~~~~~

## **MODULE –13**

### **PHYSICAL AND CHEMICAL CHANGES**

#### **Contents**

- Examples of chemical change.
  - Rusting of iron.
  - Galvanization.
  - Crystallization.
- ~~~~~

## **MODULE – 14**

### **SOIL**

#### **Contents**

- Soil as a natural resource
  - Soil profile
  - Soil type
- ~~~~~

## **MODULE – 15**

### **SOIL**

#### **Contents**

- Properties of soil
- Moisture in soil

- Absorption of water by soil
- Soil and crops

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## MODULE – 16

### WASTE WATER STORY

#### **Contents**

- Importance of water
- Sewage
- Polluted water
- Treatment of polluted water

~~~~~

## MODULE – 17

### WASTE WATER STORY

#### **Contents**

- WWTP
- Better house keeping practices
- Sanitation and disease
- Sewage disposal

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## MODULE – 18

### **Revision For Annual Examination**

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MODULE – 01/02/03

**ACIDS, BASES AND SALTS**  
**TUTORIALS**

**Symbols**

A symbol is an abbreviation of the name of the element. They have been derived in three different ways.

1. *The first letter (in capital) of the English name of an element is taken to be the symbol of the element for e.g.*

| Name     | Symbol | Name       | Symbol |
|----------|--------|------------|--------|
| Hydrogen | H      | Oxygen     | O      |
| Boron    | B      | Fluorine   | F      |
| Carbon   | C      | Phosphorus | P      |

2. *The first letter along with one more letter of The English name of an element (this becomes necessary when the names of two or more elements begin with the same letter)*

| Name      | Symbol | Name      | Symbol |
|-----------|--------|-----------|--------|
| Helium    | He     | Aluminium | Al     |
| Neon      | Ne     | Calcium   | Ca     |
| Nickel    | Ni     | Chlorine  | Cl     |
| Magnesium | Mg     | Zinc      | Zn     |
| Manganese | Mn     |           |        |

3. *One or two letters of the latin name of an element.*

| English   | Latin       | Symbol |
|-----------|-------------|--------|
| Sodium    | Natrium     | Na     |
| Potassium | Kalium      | K      |
| Iron      | Ferrum      | Fe     |
| Copper    | Cuprum      | Cu     |
| Silver    | Argentum    | Ag     |
| Tin       | Stannum     | Sn     |
| Gold      | Aurum       | Au     |
| Lead      | Plumbum     | Pb     |
| Mercury   | Hydrargyrum | Hg     |

**Formulae**

The formula of a molecule gives the number(s) of atoms of the same or different elements present in the molecule.

For e.g. Two atoms of hydrogen combine to form a molecule of hydrogen as hydrogen

atom does exist independently; it generally combines to form a molecule and is represented as  $H_2$ .

### Valency

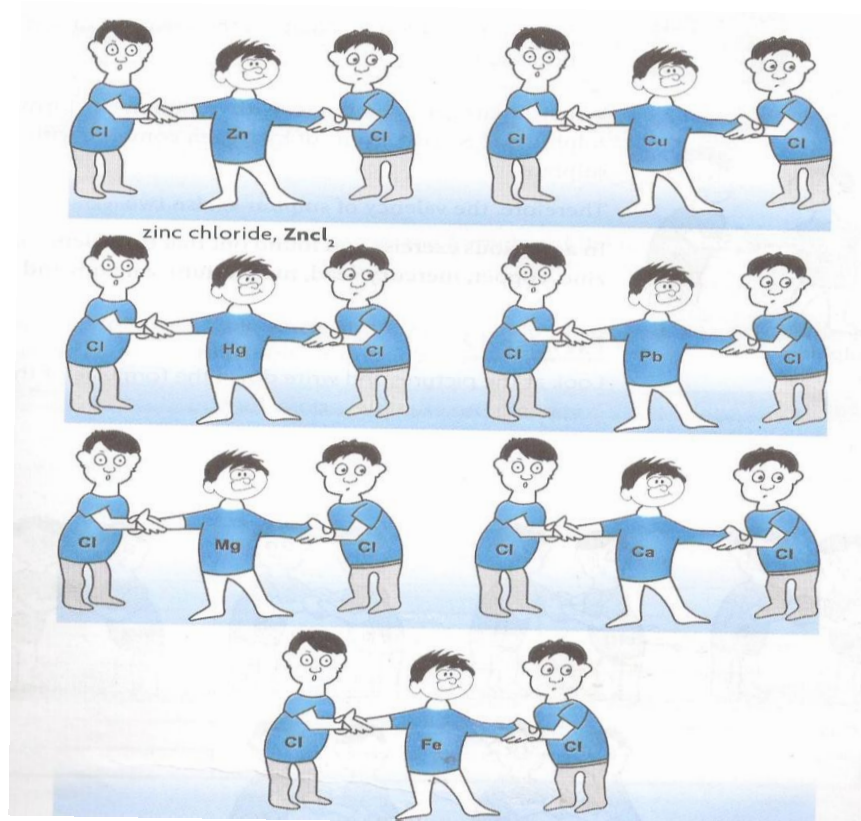
The valency of an element denotes it's combining capacity. for e.g. in  $HCl$  one atom of chlorine combines with one atom of hydrogen so the valency of chlorine is 1 and the valency of hydrogen is also 1.

In the molecule of water one atom of oxygen combines with two atoms of hydrogen so the valency of oxygen is 2 and the valency of hydrogen is 1.

### Radicals

Groups of atoms of different elements which combine as single units, but cannot exist independently are known as radicals. Thus  $SO_4$  represents the radical 'sulphate' and  $NO_3$  represents the radical 'nitrate'.

In a molecule of  $H_2SO_4$  one sulphate radical combines with two atoms of hydrogen so the valency of sulphate radical is 2.



From the above pictures we can say that-

1. The valency of chlorine is one.
2. In each case one atom of the element combines with two atoms of chlorine.
3. Hence, the valency of each of the elements – zinc, copper, mercury, lead, magnesium, calcium and iron – is two.

### **ASSIGNMENT**

Q.1. Name the following:

- (i) Substances which furnish hydronium ion in solution.
- (ii) Substances which turn blue litmus solution red.
- (iii) Substances which furnish hydroxyl ion in solution.
- (iv) Substances which turn turmeric paper red.
- (v) Chemical name for salt which we consume everyday.
- (vi) Base used as foaming agent in fire extinguisher.
- (vii) A commonly used antacid.
- (viii) The substances on which litmus solution has no effect.
- (ix) The colour of turmeric solution in soap solution.
- (x) Examples of any two mineral acids and organic acids.
- (xi) Write the name and colour of two salts found in the laboratory.

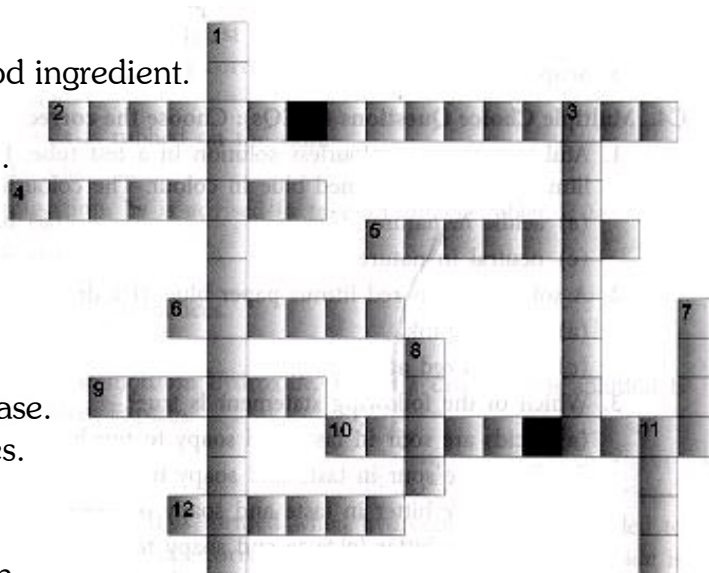
Q.2. Solve the crossword given below:

#### **Across**

2. A base present in soap.
4. An indicator which is used as a food ingredient.
5. Relievers from indigestion.
6. An indicator obtained from Lichen.
9. Soluble base.
10. An indicator which is green.
12. An acid present in an ant sting.

#### **Down**

1. Reaction between an acid and a base.
3. Tests chemical nature of substances.
7. Bitter in taste and soapy to touch.
8. Sour in taste.
11. A product of neutralization reaction.



Q.3. Match the following:-

**COLUMN I**

- (i) Sodium chloride
- (ii) Water
- (iii) Lime juice
- (iv) Lime water
- (v) Methyl orange
- (vi) Litmus
- (vii) Sting of bees
- (viii) To remove acidity

**COLUMN II**

- (a) Neutral media
- (b) Formic acid
- (c) Lichen
- (d) Magnesium hydroxide
- (e) Salt
- (f) Acid
- (g) Indicator
- (h) Base

Q.4. Fill in the blanks –

- (i) The new substance formed when an acid reacts with a base is \_\_\_\_\_.
- (ii) Heat is \_\_\_\_\_ during a neutralization reaction.
- (iii) When dilute sulphuric acid is added to lime water, the reaction mixture becomes \_\_\_\_\_.
- (iv) \_\_\_\_\_ acid is present in our stomach.
- (v) Milk of magnesia contains a base called \_\_\_\_\_.
- (vi) Calamine lotion contains \_\_\_\_\_.

Q.5. Name the acids present in the following –

- |           |                    |                |
|-----------|--------------------|----------------|
| (i) Curd  | (ii) Spinach       | (iii) Tamarind |
| (iv) Amla | (v) Aerated drinks | (vi) Vinegar   |

Q.6. Name the bases present in the following –

- |                  |                  |                        |
|------------------|------------------|------------------------|
| (i) Lime water   | (ii) Soap        | (iii) Milk of magnesia |
| (iv) Slaked lime | (v) Caustic soda | (vi) Caustic potash    |

Q.7. Give the natural source of the following acids:

- |                   |                    |
|-------------------|--------------------|
| (i) Citric acid   | (iv) Tartaric acid |
| (ii) Lactic acid  | (v) Oxalic acid    |
| (iii) Acetic acid | (vi) Maleic acid   |

Q.8. What are the colour changes of the following indicators:-

- (a) in acidic medium
- (b) in basic medium
- (c) in neutral medium

- |                      |                     |                     |
|----------------------|---------------------|---------------------|
| (i) China rose       | (ii) Red litmus     | (iii) Methyl orange |
| (iv) Phenolphthalein | (v) Turmeric powder | (vi) Blue litmus    |

Q.9. Choose the correct alternatives –

- (i) The colour of methyl orange in acids is –  
(a) yellow      (b) pink      (c) red      (d) orange
- (ii) Acidic soil can be neutralized by adding –  
(a) quicklime      (b) vinegar      (c) nitric acid      (d) formic acid
- (iii) Atul was given a colourless solution in a test tube. He put a drop of this solution on blue litmus paper. It remained blue in colour. The colourless solution is  
(a) acidic in nature      (c) neutral in nature  
(b) basic in nature      (d) nothing can be said
- (iv) A solution turns red litmus paper blue. If a drop of phenolphthalein is added to it,  
(a) it turns pink      (c) it remains colourless  
(b) it turns red again      (d) it turns blue
- (v) Orange juice is sour in taste due to the presence of  
(a) acetic acid      (c) formic acid  
(b) citric acid      (d) tartaric acid

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### **QUESTION BANK- ACID AND BASES**

Q.1. Answer the following questions:

- (i) Where do we get litmus solution from?
- (ii) Give any two use of acids?
- (iii) What causes indigestion? How it can be treated?
- (iv) How can you neutralize the effect of ant sting?
- (v) What makes the soil acidic? How it can be treated?
- (vi) Mention any two uses of bases.
- (vii) Is the distilled water acidic/ basic/ neutral? How would you verify it?

- (viii) Describe the process of neutralization with the help of an example.
- (ix) Dorji has a few bottles of soft drink in his restaurant. But unfortunately, these are not labelled. He has to serve the drinks on the demand of customers. One customer wants acidic drink, another wants basic and third one wants neutral drink. How will Dorji decide which drink is to be served to whom?
- (x) Three liquids are given to you. One is hydrochloric acid, another is sodium hydroxide and third is a sugar solution. How will you identify them? You have only turmeric indicator.
- (xi) Blue litmus paper is dipped in a solution. It remains blue. What is the nature of the solution? Explain

Q.2. Define the following with examples:

- |                              |                            |
|------------------------------|----------------------------|
| (i) Indicators               | (v) Antacids               |
| (ii) Acid rain               | (vi) Neutral substances    |
| (iii) Natural indicators     | (vii) Synthetic indicators |
| (iv) Neutralization reaction |                            |

Q.3. Differentiate between:

- (i) Acids and bases
- (ii) A base and an alkali
- (iii) Mineral acids and Organic acids
- (iv) Concentrated acids and Dilute acids

Q.4. Give reasons for the following –

- (i) Vinegar is sour.
- (ii) We should not taste a substance to test whether it is acidic or basic.
- (iii) We add organic matter to soil which is basic in nature.
- (iv) We can use a lemon for cleaning copper vessels.
- (v) A scientist visited a farmer's field and found the soil to be highly acidic. He suggested the farmer to add ammonia based fertilizers.
- (vi) China rose gives no colour change with solid baking soda.
- (vii) Why does a vegetable stain turn reddish- brown when washed with soap solution
- (viii) An antacid tablet is taken when you suffer from acidity.
- (ix) Calamine solution is applied on the skin when an ant bites.
- (x) Factory waste is neutralized before disposing it into the water bodies.

Q.5. Substance 'X' is obtained by the reaction of sulphuric acid and sodium hydroxide. Identify 'X' and write its chemical formula?

Q.6. Take water in a test tube and add few drops of blue litmus to it. With the help of a straw, blow air into the solution. It turns red. Explain the reason behind the colour change.

Q.7. Complete the following neutralization reaction:

(i) Potassium hydroxide + Sulphuric acid  $\longrightarrow$  Potassium sulphate +  
\_\_\_\_\_ + \_\_\_\_\_.

(ii) Calcium hydroxide + Hydrochloric acid  $\longrightarrow$  \_\_\_\_\_ + water +  
\_\_\_\_\_

(iii) Carbonic acid + Sodium hydroxide  $\longrightarrow$  \_\_\_\_\_ + \_\_\_\_\_ + heat.

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**MODULE – 04/05/06**

**FIBRE TO FABRIC**  
**TUTORIAL**

**Raw silk and spun silk**

The filament which a cocoon is made up of is too fine and delicate to handle. So many of them are reeled together to yield a stronger thread, called *Raw silk*. Damaged cocoons are used to make inferior silk called *Spun silk*.

**Twisting the Threads—Throwing**

The raw silk prepared is twisted to produce what is known as *Thrown silk*. The process is called throwing and the people who throw the silk are called *Throwsters*

**Physical properties of wool**

1. Smoothness- A wool fibre feels smooth to touch.
2. Tensile strength-Has high tensile strength. It can bear a great pull without breaking.
3. Absorption of water-Wool absorbs more water than any other fibre.

**Chemical properties of wool**

1. Action of heat-it starts changing colour at 100°C, but does not catch fire easily. It also becomes yellowish when left in hot and humid atmosphere for a long time.
2. Action of acids and bases- It dissolves in acids and alkalis.
3. Action of bleaching agents-The fibre can be bleached without the loss of strength.

**Burning Characteristics Of Various Fibres**

S.No	Name of fibre	Burning characteristics	Smell	Residue characteristics
1.	Cotton	Burns steadily and gives out light smoke.	Burning paper	Fine ash is produced, which crumbles on touching.
2.	Nylon	Melts, shrinks and drops of melted nylon fall on the ground.	Burning plastic	Dry hard beads are produced that can be moulded when hot and are hard when cold.
3.	Silk	Burns slowly (Fire extinguishing)	Burning hair	Silver beads which crush easily to powder.
4.	wool	Burns slowly, stops burning when removed from the source	Burning hair	First turns brown, then shiny hollow beads are produced, which crumble on pressing.

~~~~~  
**ASSIGNMENT**

Q.1. Name the following:

- (i) Any two fibres obtained from animals.
- (ii) Four animals that give us wool.
- (iii) The two types of fibres that form fleece of sheep.
- (iv) Microorganism responsible for causing a fatal blood disease – sorter's disease in workers involved in wool industry.
- (v) Breed of sheep that gives brown fleece.
- (vi) Quality of wool obtained from patanwadi.
- (vii) The state where the following breed of sheep are found.
  - (a) lohi
  - (b) nali
  - (c) marwari
- (viii) The country that leads the world in silk production.

Q.2. Select the odd one out giving reason.

- (i) Cotton, silk, wool.

- (ii) Camel, sheep, silk worm.
- (iii) Shearing, scouring, reeling.
- (iv) Sorting, cocoon, boiling, carding.
- (v) Angora, merino, tassar.

Q.3. Fill in the blanks –

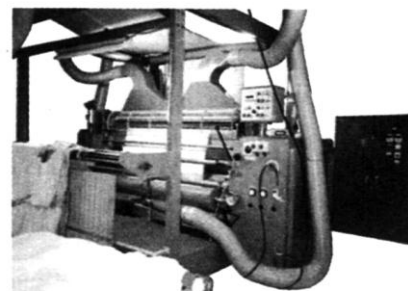
- (i) Angora wool is obtained from \_\_\_\_\_.
- (ii) \_\_\_\_\_ and \_\_\_\_\_ are the two types of camels which give us wool.
- (iii) Sheep feeds on \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- (iv) Workers working in wool industry suffer from \_\_\_\_\_.
- (v) \_\_\_\_\_ leads the world in wool production.
- (vi) Cocoons are \_\_\_\_\_ in colour.
- (vii) Silk worms feed on \_\_\_\_\_.

Q.4. Choose the right answer.

- (i) Which of these is not a fiber?  
(a) cotton      (b) wool      (c) nylon      (d) leather
- (ii) Which of these is not an animal fiber?  
(a) wool      (b) silk      (c) jute      (d) angora
- (iii) Which of these is a synthetic fiber?  
(a) jute      (b) rayon      (c) cotton      (d) mohair
- (iv) Silk and wool fibres are made of  
(a) fats      (b) proteins      (c) carbohydrates      (d) all of these
- (v) From which of the following sheep do we obtain carpet wool?  
(a) Marwari sheep      (b) Merino sheep      (c) Lohi sheep      (d) Nali sheep

Q.5. The figure shows a shearing machine

- (i) Define shearing.
- (ii) Why is it done in summers?
- (iii) Shearing is painful for sheep. Yes/ No. Give reasons.



A shearing machine

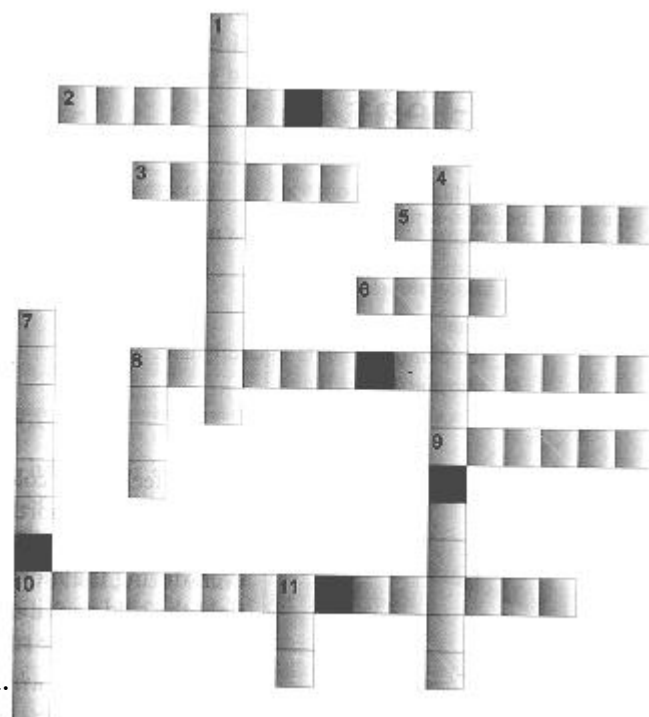
Q.6. Solve the crossword given below:

**DOWN:**

1. Breeding and management of silkworms.
4. Obtained from fine hair of Kashmiri goat.
7. Scientific name of silk- producing moth.
8. Queen of fibres.
11. A source of wool.

**ACROSS:**

2. Source of Angora wool.
3. Covering of silk fibre.
5. Passing fibres through metal teeth to straighten them.
6. A breed of sheep found in India.
8. An occupational disease.
9. A source of wool found in South America.
10. Food of silkworm.



Q.7 Complete the matrix:

| Step        | Procedure                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------|
| 1. Shearing | _____                                                                                                       |
| 2. _____    | The sheared skin with thick coat of hair is then washed thoroughly in tanks to remove grease dirt and dust. |
| 3. _____    | The dyed fibers are passed through metal teeth to straighten them.                                          |
| 4. Spinning | _____                                                                                                       |

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### **QUESTION BANK- FIBER TO FABRIC**

Q.1. Answer the following questions:

- (i) State the characteristics of mulberry silk.
- (ii) How do we obtain silk thread from cocoons? Explain the steps.
- (iii) What adverse effects are observed on the health of workers in silk Industry?
- (iv) List some occupational hazards of silk industry.
- (v) List five types of animal fibers and their sources.
- (vi) How much time does a caterpillar take to form a cocoon.
- (vii) Give examples of different varieties of silk.
- (viii) List and explain the steps of wool extraction.
- (ix) Make sketches of all the stages in the life history of the silk moth.

Q.2. Give reasons:

- (i) Animals living in cold regions have a thick coat of hair.
- (ii) Woolen clothes keep us warm in winter.
- (iii) Shearing does not hurt the sheep.
- (iv) Smell of burning wool and silk is similar.

Q.3. Draw the life cycle of a silk moth and answer the following questions:

- (i) In which stage does the silk moth feed on the plant leaves?
- (ii) In which stage is the cocoon formed?
- (iii) How is cocoon formed?
- (iv) What happens to the caterpillar inside the cocoon?

Q.5 Differentiate between:

- (i) Plant fibres and animal fibres
- (ii) Sorting and scouring

Q.6. Define the following:

- |                            |                |
|----------------------------|----------------|
| (i) Reeling of silk thread | (vi) Fleece    |
| (ii) Sericulture           | (vii) Shearing |
| (iii) Selective breeding   | (viii) Burrs   |
| (iv) Pupa                  | (ix) Reeling   |
| (v) Rearing                |                |

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**MODULE: 07/ 08/09**

**WATER- A PRECIOUS RESOURCE**  
**TUTORIAL**

**PROPERTIES OF WATER**

1. Nature: Pure water is a colourless, odourless and tasteless liquid.
2. States: Pure water exists in all three states as solid (ice), liquid (water) and gas (steam or water vapour)
3. Freezing Point: Pure water freezes to ice at 0° C.
4. Boiling Point: Pure water boils at 100°C.
5. Stable substance: Water is a stable substance .It is broken down into its components hydrogen and oxygen by heating beyond 500°C or by electrolysis.
6. Anamolous Expansion: On cooling below 4°C, water expands and hence its volume increases.
7. Density: Pure water has the maximum density at 4° C and minimum density at 0° C. That is why ice cubes float on water.
8. Good solvent: water is an excellent solvent. It dissolves many substances forming an aqueous solution.
9. Saline Water: Rain Water dissolves solid salts on land and carries them to the sea. These have been added to the oceans over the years and sea water has become salty. This is called saline water.

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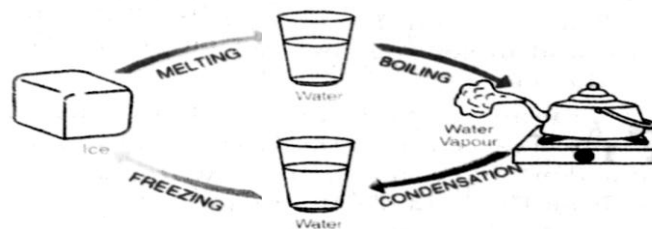
**ASSIGNMENT**

Q.1. Fill in the blanks –

- (i) Water exists as \_\_\_\_\_ and \_\_\_\_\_ in solid state.
- (ii) Liquid water is present in \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- (iii) Plants lose water by the process of \_\_\_\_\_.
- (iv) Water which seeps down into the ground is called \_\_\_\_\_.
- (v) The problem of water shortage is \_\_\_\_\_ day by day.
- (vi) \_\_\_\_\_ is the ultimate source of water.
- (vii) \_\_\_\_\_ substance can lead to contamination of water.
- (viii) \_\_\_\_\_ and \_\_\_\_\_ are water borne diseases.
- (ix) \_\_\_\_\_ is the method of collecting rainwater for future use.
- (x) Water of oceans is \_\_\_\_\_ hence, cannot be used for drinking.
- (xi) Like air, forests, sun, \_\_\_\_\_ is also a natural resource.

- (xii) River water gets polluted by \_\_\_\_\_ in them.  
(xiii) In India \_\_\_\_\_ sector is the major user of water.  
(xiv) One of the main reason for scarcity of water is \_\_\_\_\_.

Q.2. The diagram shows that states of water are interchangeable. Prove this statement correct.



Q.3. Match the following:

- |   |   |
|---|---|
| (i) Water fit for consumption               | (a) Polluted water                        |
| (ii) Water found in wells                   | (b) Distilled water                       |
| (iii) A liquid present in all human beings  | (c) CO <sub>2</sub> from 70 to 90 percent |
| (iv) Gas that is extremely soluble in water | (d) Potable water                         |
| (v) Pure water used for medicinal purpose   | (e) Underground water                     |
| (vi) Water containing harmful substances    | (f) Water                                 |

Q.4. Select the odd one out giving reasons:

- (i) Ocean, ground water, lakes.  
(ii) Water, ice, snow.  
(iii) Infiltration aquifer, drip irrigation.  
(iv) Water harvesting, bawris, aquifer.

Q.5. Name the following :

- (i) Constant circulation of water on earth.  
(ii) The process of seeping of water into the ground.  
(iii) The level of water under the ground.  
(iv) Percentage of water on earth available for our use.  
(v) The day is celebrated as World Water Day.  
(vi) The main source of ground water.

Q.6. Tick the correct answer.

- (i) Seeping of water into ground is (seepage/infiltration).  
(ii) Excessive rains cause (floods/ draught).  
(iii) Freshwater present is (more/less) than water of the oceans.  
(iv) Saline water is found in (lakes / oceans).

Q.7. Write true or false:

- (i) One third of the world will face water scarcity in a few years.
- (ii) Water which is fit for human use is called saline water.
- (iii) 71% of the earth's surface is covered with water.
- (iv) Fresh water stored in the ground is much more than that present in the rivers and lakes.

=====

### **QUESTION BANK**

Q.1. Answer the following questions:

- (i) What are the various effects of water scarcity?
- (ii) State the importance of water in human body?
- (iii) How does aquifers get recharged?
- (iv) List various reason of depletion of ground water?
- (v) List any three problems caused due to water scarcity?
- (vi) How are forests contributing to recharging of ground water?
- (vii) Describe the water cycle in nature.
- (viii) How can you conserve water at your home?
- (ix) How do you think putting a layer of mulch helps in increasing the water table?
- (x) How is water table affected by our increasing population?
- (xi) Give any two water wise habits.
- (xii) How ground water can be obtained and used by us?
- (xiii) Explain how groundwater is recharged.
- (xiv) Explain the factors responsible for the depletion of water table.
- (xv) Make a sketch showing ground water and water table. Label it.
- (xvi) Make a sketch to show the various process involved in the water cycle and explain each process.

Q.2. Define the following:

- |                    |                 |
|--------------------|-----------------|
| (i) Water cycle    | (iv) Aquifer    |
| (ii) Ground water  | (v) Water table |
| (iii) Infiltration |                 |

Q.3. Give reasons:

- (i) Sea and Ocean water is unfit for human consumption.
- (ii) Planting trees prevents depletion of water table.
- (iii) Sea and Ocean water is saline.

(iv) Grass lawn is better than a cemented floor.

Q.4. Write about the different sources of water available to us. Which source of water is the most important for us and why?

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## Module-10

### Revision Module

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## Module: 11/12/13

### PHYSICAL AND CHEMICAL CHANGES TUTORIAL

**Atom:** An atom is the smallest particle of an element which can take part in a chemical reaction.

**Molecule:** A molecule is the freely existing smallest particle of a pure substance which shows the physical and chemical properties of that substance.

**Element:** An element is the simplest form of a pure substance.

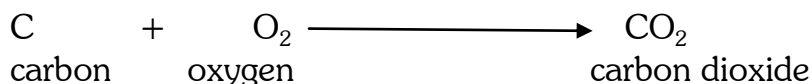
**Mixture:** When two or more substances are mixed in such a way that they do not lose their own properties they are said to form a mixture.

**Compound:** A compound is a pure substance formed by the combination of elements in fixed proportion by weight.

#### **Types of Chemical Reactions**

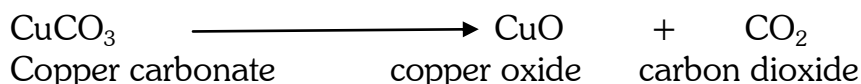
##### **1. Combination reaction**

In a combination reaction two or more reactants add up to form a product.



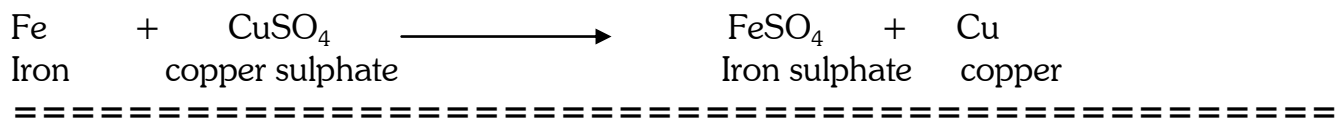
##### **2. Decomposition reaction**

In a decomposition reaction one substance breaks down into two or more simpler substances.



##### **3. Displacement reaction**

In a displacement reaction one element displaces another from a compound and takes its place in the compound.



### **ASSIGNMENT**

Q.1. Classify the following changes as physical or chemical changes –

- |                            |                                 |
|----------------------------|---------------------------------|
| (i) Burning of sugar       | (vi) Burning of coal            |
| (ii) Melting of butter     | (vii) Growth of plants to trees |
| (iii) Souring of milk      | (viii) Spoiling of food         |
| (iv) Drying of wet hair    | (ix) Bursting of crackers       |
| (v) Mixing lime with water | (x) Cutting of vegetables       |

Q.2. Name the following:

- (i) Common name of copper sulphate.
- (ii) The gas evolved when vinegar is reacted with baking soda.
- (iii) Any 3 alloys from your daily life.
- (iv) Two factors which cause rusting.
- (v) An example of a chemical change in which there is a change of colour.

Q.3. Metal X burns with a dazzling white flame to form a compound Y. Compound Y reacts with water to form Z which in turn turns red litmus paper blue.

- (i) Identify X, Y and Z
- (ii) Write down the chemical reactions involved.

Q.7. Metal A change the colour of copper sulphate solution when added to it.

- (i) Name metal A.
- (ii) Write down the reaction involved in this change.
- (iii) What type of change is this?

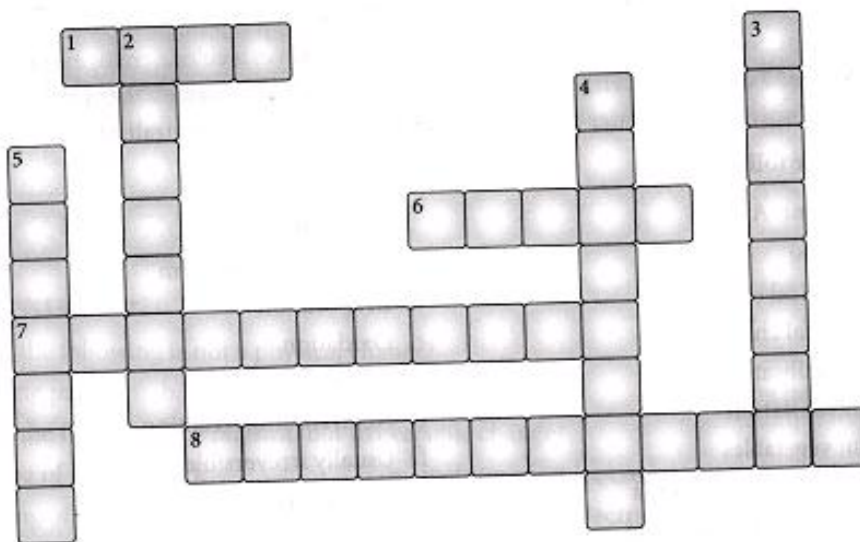
Q.5. Solve the crossword given below:

#### **ACROSS:**

- 1. This reacts with a base in neutralization reactions.
- 6. A material made of two metals or a metal and a non- metal.
- 7. Salt is obtained from sea water by this process.
- 8. Chemical changes are usually of this type.

**DOWN:**

2. Well- defined geometrically similar solids.
3. Breaking of a flower vase is this kind of change.
4. Exposed surfaces of fruits and vegetables take up this colour.
5. Common name for acetic acid.



Q.6. Match the given columns:

Column A	Column B	Column C
(i) Physical changes	(i) reacts with sulphur	(i) Rust
(ii) copper sulphate	(ii) irreversible	(ii) Chemical change
(iii) iron	(iii) no new substance is formed	(iii) Basic in nature
(iv) carbon	(iv) turns red litmus paper blue	(iv) Generally reversible
(v) spoilage of food	(v) reacts with zinc	(v) Zinc sulphate is formed
(vi) magnesium	(vi) oxygen and water	(vi) Endothermic reaction

Q.7. Complete the following reactions –

- (i) \_\_\_\_\_ + Carbon dioxide  $\longrightarrow$  Calcium carbonate + \_\_\_\_\_.
- (ii) Carbon + oxygen  $\longrightarrow$  \_\_\_\_\_
- (iii) Magnesium oxide + \_\_\_\_\_  $\longrightarrow$  Magnesium hydroxide.
- (iv) Magnesium + \_\_\_\_\_  $\longrightarrow$  Magnesium oxide.

Q.8. Fill in the blanks:

- (i) Dissolving sugar in water is a \_\_\_\_\_ change.
- (ii) The process of depositing a layer of zinc on iron is called \_\_\_\_\_.
- (iii) Crystals of pure substances are obtained from their solutions by \_\_\_\_\_.
- (iv) Hydrated iron oxide is called \_\_\_\_\_,

Q.9. Tick the correct answer:

- (i) Crystallization is a process of obtaining.
  - (a) pure solids only
  - (b) pure liquids only
  - (c) pure gas only
  - (d) all of these
- (ii) Observe the following two changes. Change A: Biogas is produced by decomposition of animal and plant waste by anaerobic bacteria. Change B: Biogas is burnt as other fuels. Which of these is a chemical change?
  - (a) Change A
  - (b) Change B
  - (c) Both (a) and (b)
  - (d) None of these
- (iii) Rusting of iron can be prevented by
  - (a) galvanizing
  - (b) electroplating
  - (c) alloying
  - (d) all of these
- (iv) Which of the following is a physical but irreversible change?
  - (a) burning of a matchstick
  - (b) melting of an ice cream
  - (c) crushing of glass
  - (d) lighting of an electric bulb

=====

### **QUESTION BANK**

Q.1. Answer the following questions:

- (i) How can we show that the residue left after burning magnesium is basic in nature?
- (ii) What do you observe when iron or zinc pieces are added to blue coloured solution of copper sulphate?
- (iii) What will happen if a copper wire is added in a solution of ferrous sulphate?
- (iv) State the conditions necessary for rusting.

- (v) Explain the importance of ozone layer present in upper atmosphere.
- (vi) Is galvanization a physical or a chemical change? Explain.
- (vii) State various methods used to prevent rusting.
- (viii) What are the characteristics of chemical change?
- (ix) How can you test for the presence of  $\text{CO}_2$  gas?
- (x) When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a gas. What type of change is it? Explain.
- (xi) How would you show that setting of curd is a chemical change?
- (xii) Explain why burning of wood and cutting it into small pieces are considered as two different types of changes.
- (xiii) Describe how crystals of copper sulphate are prepared.
- (xiv) Explain how painting of an iron gate prevents it from rusting.
- (xv) Explain why rusting of iron objects is faster in coastal areas than in deserts.

Q.2. Give reasons:

- (i) A steel glass does not rust.
- (ii) We rub a magnesium ribbon with a sand paper before burning it.
- (iii) Evaporation of water due to heat of sun is a Physical Change.
- (iv) On hammering a piece of iron, sound is produced but no new substance is formed.
- (v) Lime water turns milky when carbon dioxide gas is passed through it.
- (vi) The process of digestion is said to be a chemical change.
- (vii) Cut vegetable take up a brown colouration when exposed in air.
- (viii) Rusting is seen mostly during rainy season.

Q.3. Define the following:

- |                     |                |
|---------------------|----------------|
| (i) Crystallisation | (iii) Alloying |
| (ii) Galvanisation  | (iv) Rusting   |

Q.4. Differentiate between:

- (i) An element and a compound
- (ii) Physical and Chemical changes

Q.5. Which one out of iron and copper is more reactive? Illustrate your answer with the help of an example.

Q.6. If a certain compound has the formula  $\text{H}_2\text{X}$ , what is the valency of X?

Q.7. Represent the following changes in the form of equation –

- (i) Burning of Magnesium ribbon.

---

(ii) Reaction between copper sulphate and iron nails.

---

(iii) Reaction between vinegar and baking soda.

---

(iv) Reaction between carbon dioxide and lime water.

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**Module: 14/15**

**SOIL**  
**TUTORIAL**

A parameter by which soil is differentiated, is its geographical availability.

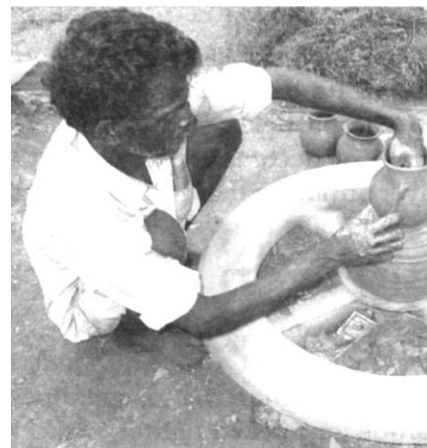
1. **Red soil.** As the name suggest, the soil is reddish in colour. This is because of the presence of iron oxide in it. It is mainly found in Kerala, Tamil naidu and other south Indian states. It is also called red latosol.
2. **Black soil.** Also known as Regar, this soil is porous and rich in minerals and humus. It is produced by basaltic rock which is rich in magnesium and iron. It is found in Maharashtra, Madhya Pradesh, Gujarat and some other states.
3. **Alluvial soil.** This type of soil is formed by silt that has been deposited by the flowing rivers. It is superbly fertile and best suited for the cultivation of wheat, rice and sugarcane. It is mainly found in Uttar Pradesh, Haryana, Bihar, other states. Another name for this soil is Khadar.
4. **Desert soil.** This soil is extremely sandy in texture. But it contains good amount of soluble salt, and when watered, becomes fertile. It is mainly found in Rajasthan and some parts of Gujarat.
5. **Mountain soil.** This type of soil is very fertile. This soil has the highest humus content of all the soils found in India. It is found in the Himalayan region and north-east part of India.

6. **Laterite soil.** This type of soil is found in region which receive a lot of rainfall. It is found in the Western Ghats of India along with some places in Tamil Naidu, Andhra Pradesh, Orissa and Assam.

=====

**ASSIGNMENT**

- Q.1. (i) Name the type of soil.  
(ii) Write the size of its particles.  
(iii) Write its uses.



- Q.2. Fill in the blanks –

- (i) Percolation rate of water is highest in \_\_\_\_\_ and least in \_\_\_\_\_.  
(ii) \_\_\_\_\_ soil is used to make pots, toys and statues.  
(iii) Cutting down trees on a large scale is called \_\_\_\_\_.  
(iv) B-horizon is lighter in colour because of the presence of less amount of \_\_\_\_\_.  
(v) Soil has many \_\_\_\_\_ which allows water to flow down.

- Q.3. Name the following –

- (i) Dead and rotting remains of plants and animals  
(ii) Type of soil having largest size of particles.  
(iii) Darkest layer of soil  
(iv) An organism that lives in soil  
(v) Breaking down of small particles by action of air or wind  
(vi) Soil that can hold much water but is not well aerated  
(vii) Most fertile soil.  
(viii) Some of the pollutants of soil.  
(ix) Layer that lies beneath C-horizon.  
(x) Kind of soil used for making pottery.

(xi) Two states where you can find mountain soil.

Q.4. Which type of soil is required for growing: –

- (i) Wheat and gram
- (ii) Paddy
- (iii) Lentils and other pulses
- (iv) Cotton

Q.5. Choose the most appropriate answer:

(i) Humus and the smallest particles of rock form the

- (a) A-Horizon                      (b) B- Horizon
- (c) C-Horizon                    (d) Bedrock

(ii) Which kind of soil is best for growing cotton?

- (a) Laterite soil                    (b) Black soil
- (c) Red latasol                    (d) Alluvial Soil

(iii) Which soil has the highest humus content?

- (a) Laterite soil                    (b) Mountain soil
- (c) Alluvial soil                    (d) Black soil

(iv) Which of these has the smallest size particles?

- (a) Sand                              (b) Silt
- (c) Clay                              (d) Gravel

=====

### **QUESTION BANK-SOIL**

Q.1. State the functions of soil.

Q.2. Define –

- (1) Humus                      (2) Weathering                      (3) Soil profile
- (4) Soil                      (5) Silt                      (6) Soil erosion

Q.3. What are the characteristics of A-horizon?

Q.4. A soil sample takes 45 minutes to percolate 900ml of water. Calculate the rate of percolation of the sample?

Q.5. Trees help in making the soil as well as protecting it. Explain?

Q.6. Give reasons:-

- (i) Top most horizon is more important than all other horizons.
- (ii) Humus is an important part of soil.
- (iii) The air above a farmland is shimmering during a hot summer day.
- (iv) Loamy soil is considered as the best soil for growing plants.

Q.7. Explain how soil is formed?

Q.8. How is clayey soil useful for crops?

Q.9. List the differences between clayey soil, sandy soil and loamy soil.

Q.10. Razia conducted an experiment in the field related to the rate of percolation. She observed that it took 40 min for 200 ml of water to percolate through the soil sample. Calculate the rate of percolation.

Q.11. Explain how soil pollution and soil erosion could be prevented.

Q.12. Calculate the percentage of water absorbed by a soil sample of 50 gm when the initial volume of water taken is 50 ml and the final volume of water is 25 ml in the measuring cylinder.

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### **Module: 16/17**

## **WASTE WATER STORY** **TUTORIAL**

1. **Black Water**-The waste water from toilets is often referred to as Black water.
2. **Grey Water**-The waste water from toilets and kitchens is called Grey water.
3. **Industrial effluent** –The industrial waste water is known as industrial effluent.
4. **Eutrophication**-Presence of excessive nutrients (water soluble phosphates and nitrates) in a lake or other water bodies causes a dense growth of algae and other water plants, known as eutrophication.

### **Hazards of untreated sewage**

- \* Animals and Birds that go in oil contaminated water are harmed. The birds die from exposure to cold water and air due to damaged oil soaked feather.

- \* If water soluble radioactive compounds are discharged without treatment it can cause cancer, birth defects and genetic disorders.
- \* The suspended sediments, cause depletion in the water's light absorption and spread harmful compounds such as pesticides through the water.

### **Wetlands**

Natural wetlands are used as an alternative for sewage treatment. They have bacteria, worms and protozoans which act on organic matter. They also have grasses and reeds which can filter out many pollutants.

=====

### **ASSIGNMENT**

Q.1. Fill in the blanks:-

- (i) The solid impurities removed from sewage can be used as \_\_\_\_\_.
- (ii) The \_\_\_\_\_ system transport the sewage from homes to a treatment plant.
- (iii) Last stage in the treatment of sewage is \_\_\_\_\_.
- (iv) Sewage mainly consists of \_\_\_\_\_.

Q.2. Answer in one word:

- (i) Domestic waste water.
- (ii) Industrial and commercial waste.
- (iii) System of sewerage in rural areas.
- (iv) These organisms treat sewage in composting pits.

Q.3. Name the following:-

- (i) Any four organic impurities present in sewage.
- (ii) The gas produced during anaerobic decomposition of sludge.
- (iii) Some diseases caused by untreated sewage.
- (iv) Various types of contaminants that are present in sewage.

Q.4. No contamination of drinking water can occur if closed pipes are used for drainage of Sewage. (True or False)

Q.5. Which of these diseases is not caused by the improper disposal of sewage?

- (i) Cholera      (ii) Heart attack      (iii) Jaundice      (iv) Typhoid

Q.6. Tick the correct answer:

- |   |                         |
|---|-------------------------|
| (i) Wastewater is called<br>(a) sewage<br>(c) sewerage              | (b) sewer<br>(d) sludge |
| (ii) The light materials which float during wastewater treatment is |                         |
| (a) scum<br>(c) sludge  | (b) sewer<br>(d) sewage |

=====

### **QUESTION BANK –WASTE WATER STORY**

Q.1. Define –

- |                  |                     |
|------------------|---------------------|
| 1. Sewage        | 4. Biogas           |
| 2. Contaminants  | 5. Activated sludge |
| 3. Potable Water | 6. Sanitation       |

Q.2. Give reasons:-

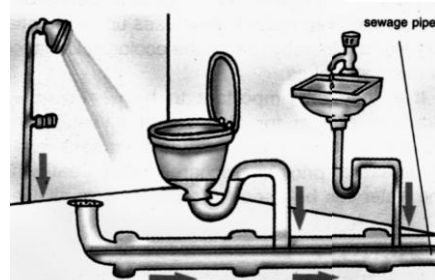
- (i) We should prefer to use manure or compost instead of Fertilizers.
- (ii) We should not throw chemicals like paints, insecticides, solvents, etc in drains.
  
- (iii) We should pump air through clarified water.
- (iv) Oils and fats should not be released in the drain.

Q.3. Answer the following:-

- (i) List four uses of Water.
- (ii) The purpose of passing waste water through bar screens.
- (iii) Some ways to control Water pollution at home.
- (iv) What problems can arise due to improper drainage?
- (v) In what ways can the sludge obtained be made useful?
- (vi) How is stagnant water in blocked drains harmful?
- (vii) How can contamination of drinking water occur from sewage even in covered drainage system?
- (viii) What is sewage? Explain why it is harmful to discharge untreated sewage into rivers or seas?
- (ix) Describe the steps involved in getting clarified water from waste water.
- (x) What is sludge? Explain how it is treated?
- (xi) Untreated human excreta is a health hazard. Explain.

- (xii) Explain the function of bar screens in a waste water treatment plant.
- (xiii) Explain the relationship between sanitation and disease.
- (xiv) Outline your role as an active citizen in relation to sanitation.

Q.4. The following figure shows how domestic sewage is generated.



How domestic sewage is generated

- (i) State the importance of drainage.
- (ii) Enlist the steps of sewage treatment.

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## **Module – 18**

### **Revision For Annual Examination**

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## **BIOLOGY**

### **CHAPTER: NUTRITION IN PLANTS**

#### **MODULE – 1 & 2**

#### **CONTENTS:**

- Mode of nutrition in plants
- Photosynthesis
- Other modes nutrition in plants
- Symbiotic relationship
- How nutrients are replenished in the soil

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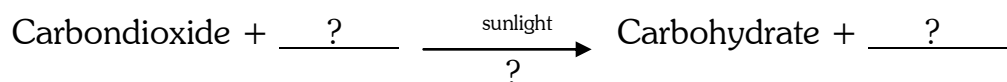
Q1. Give one word answer

- (i) Food factories of plants.
- (ii) The green pigment present in plant.
- (iii) Ultimate source of energy .
- (iv) Component of food necessary for our body.
- (v) Autotrophs make their own food and are therefore also called-
- (vi) Heterotrophs use the food made by autotrophs and are also called-

Q2. Fill in the blanks

- (i) Algae are \_\_\_\_\_ (autotrophs/heterotrophs).
- (ii) Starch gives \_\_\_\_\_ colour, when treated with iodine solution.
- (iii) Proteins contain carbon, \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_.
- (iv) Sunlight, \_\_\_\_\_, \_\_\_\_\_, & \_\_\_\_\_ are the raw materials to carry out photosynthesis in plants.
- (v) Plant with red, brown or violet coloured leaves \_\_\_\_\_ (can /cannot) perform photosynthesis.
- (vi) Nitrogen is added to the soil with the help of \_\_\_\_\_ bacteria and by using \_\_\_\_\_ & \_\_\_\_\_ .
- (vii) Three main components of cell are \_\_\_\_\_ , \_\_\_\_\_, & \_\_\_\_\_ .
- (viii) The plant in which photosynthesis is done by stem instead of leaves is \_\_\_\_\_ .

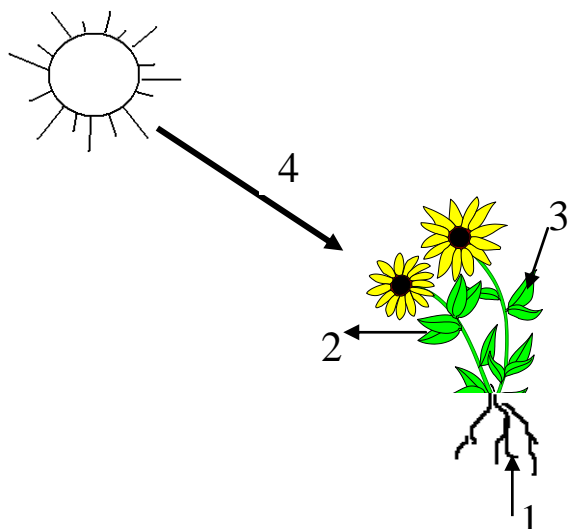
Q3. Complete the following equation:



Q4. Complete the table giving information about photosynthesis.

Raw Materials	Source	Plant Part
Carbondioxide	<u>          ?          </u>	Enter into leaves by <u>                    </u>
Water	soil	Absorbed by <u>                    </u>
Sunlight(gives energy for photosynthesis)	<u>          ?          </u>	Captured by Chlorophyll pigment present in <u>                    </u>
Chlorophyll (traps solar energy)	Cells containing chlorophyll	<u>                    </u> & other green parts

Q5. Observe the figure and answer the following questions:



- (i) This figure is showing the process called                                 .
- (ii) Arrow 1 represent absorption of                      &                      by roots.
- (iii) Absorption of carbondioxide is represented by arrow no.                     .
- (iv) Release of oxygen is represented by arrow no.                     .
- (v) Arrow no. 4 represent                      energy.

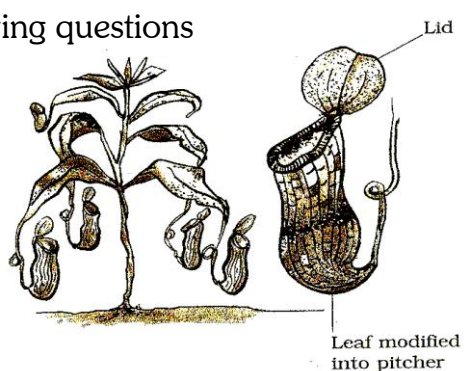
Q6. Fill in the blanks

- (i) A few plants which depend on other plants or animals for their nutrition are called \_\_\_\_\_.
- (ii) Organisms that take in nutrients from dead and decaying matter are known as \_\_\_\_\_.
- (iii) Organisms that live together & share shelter and nutrients have \_\_\_\_\_ relationship.
- (iv) To grow fungi need \_\_\_\_\_ & \_\_\_\_\_ conditions.
- (v) Major nutrients present in fertilizers are \_\_\_\_\_ , \_\_\_\_\_ & \_\_\_\_\_.
- (vi) The autotrophic partner in lichens is \_\_\_\_\_ ,while heterotrophic partner is \_\_\_\_\_ .
- (vii) The bacterium which converts atmospheric nitrogen into soluble form is \_\_\_\_\_.
- (viii) Fungi secrete \_\_\_\_\_ on dead & decaying matter.
- (ix) Fungi convert dead & decaying matter into \_\_\_\_\_ form & absorb nutrients from it.
- (x) Nitrogen can be replenished in the soil by growing \_\_\_\_\_ crops.

Q7. Give example of:

- |                           |                             |
|---------------------------|-----------------------------|
| (i) Saprotroph            | (iv) An insectivorous plant |
| (ii) Leguminous plant     | (v) A parasitic plant       |
| (iii) Partial heterotroph |                             |

Q8. Observe the figure and answer the following questions



- (i) Arrange the sequence, how does Pitcher plant trap & digest the insect
  - a) Lid closes
  - b) Insect is digested by digestive juices secreted in the pitcher
  - c) Insect gets entangled into hair in the pitcher
  - d) Insect lands in the pitcher
- (ii) Name the part of the plant
  - a) Modified into pitcher
  - b) Modified to form the lid of the pitcher
- (iii) Insectivorous plants do photosynthesis. (true or false)
- (iv) The nutrient lacking in the soil where such plant grow ( oxygen/nitrogen).
- (v) The hair inside pitcher point (upward /downward).
- (vi) The part which produces digestive juices (pitcher/lid)
- (vii) The given plant closes its lid when insect enters it. What role does insect plays in given plant?
  - a) Helping in fertilization process
  - b) Providing nutrients to plants
  - c) Dispersal of seed
  - d) Providing  $\text{CO}_2$  to plants

Q9. Match the following:

- |   |                            |
|---|----------------------------|
| (i) Umbrella like patches growing on rotting logs         | (a) Algae                  |
| (ii) Cotton like threads growing on bread                 | (b) Symbiotic Relationship |
| (iii) Lichens show  | (c) Useful for plants      |
| (iv) Bacterium Rhizobium in roots of leguminous plants    | (d) Cuscuta                |
| (v) Slimy green patches in ponds or stagnant water bodies | (e) Fungi                  |
| (vi) Parasite   | (f) Mushrooms              |

Q10. Complete the table.

<b>Symbiotic relationship</b>	<b>Partners</b>	<b>Roles</b>
Lichens	_____ & _____	1) _____ provide food to _____.  2) _____ provide shelter, water & minerals to _____.
Rhizobium-Legume	_____ & _____	1) _____ fix atmospheric nitrogen into soluble form which can be utilised by _____.  2) legume plant provide shelter & food to _____.

~~~~~  
**QUESTION BANK**

- Q1. (i) Define nutrition- [hint: pg-1 NCERT, first column, last line]  
(ii) Differentiate between Autotrophic and Heterotrophic mode of nutrition- [hint: pg-1, NCERT, 2<sup>nd</sup> column, 1<sup>st</sup> para (Do in tabulated form)]
- Q2. Define photosynthesis and write its equation. Also draw the diagram- [hint: pg-3, NCERT, figure-1.3, 1<sup>st</sup> colm. 2<sup>nd</sup> para]
- Q3. Give the importance of:  
(i) Chlorophyll [pg-2, NCERT]  
(ii) Photosynthesis [pg-2, NCERT]  
(iii) Stomata [pg-2, NCERT]
- Q4. (i) Fats can easily be made from carbohydrate by plants but not the proteins. Why? [hint: pg-4, NCERT, 1<sup>st</sup> colm. last line]  
(ii) How do plants synthesize proteins? [hint: pg-4, 2<sup>nd</sup> colm, 2<sup>nd</sup> para]

- Q5. Show with the help of a sketch that plants are ultimate source of food.  
[hint- grass → deer → lion]
- Q6. (i) What are insectivorous plants? Give example. [hint- pg-5, NCERT, also draw fig, no. 1.6]  
(ii) How does Pitcher plant trap and digest insect? [hint- pg-5, NCERT, 2<sup>nd</sup> colm, 2<sup>nd</sup> para]  
(iii) Why insectivorous plants are called partial heterotrophs? [hint: being green in colour performs photosynthesis, but depends on insects also]
- Q7. Differentiate between parasites and saprophytes. Give examples. [hint- pg-5 & 6, NCERT]
- Q8. Define symbiotic relationship. Give example. [hint- Assignment booklet, Complete the table Q-10, Module: 1 & 2]
- Q9. Give reasons:  
(i) In cactus leaves don't do photosynthesis. [hint: leaves reduce to spines to prevent water loss, photosynthesis done by green, fleshy stem]  
(ii) Red purple leaves can do photosynthesis. [hint: pg- 4, NCERT, 1<sup>st</sup> colm, 2<sup>nd</sup> para]  
(iii) There is no need to add nitrogenous fertilizers while growing leguminous plants. [hint: due to rhizobium in these plants' roots which fix nitrogen]
- Q10. Name a parasitic plant. How does it derive nourishment? (hint: pg-4 last para 3<sup>rd</sup> last line)
- ~~~~~

## **CHAPTER: NUTRITION IN ANIMALS**

### **MODULE- 3 &4**

#### **CONTENTS:**

- Nutrition in humans
  - Alimentary canal
  - Digestive glands
  - Digestion in Grass Eating Animals
  - Nutrition in amoeba
- =====

- Q1. Arrange the following in sequential order:

**(a) Parts of alimentary canal-**

- |                      |                 |
|----------------------|-----------------|
| i. Large intestine   | v. Anus         |
| ii. Rectum           | vi. Stomach     |
| iii. Small intestine | vii. Oesophagus |
| iv. Buccal cavity    |                 |

**(b) Steps of nutrition-**

- |                   |              |
|-------------------|--------------|
| i. Absorption     | iv. Egestion |
| ii. Digestion     | v. Ingestion |
| iii. Assimilation |              |

Q2. Complete the table:

| AGE               | TYPE OF TEETH | NO. OF TEETH | AGE OF FALLING |
|-------------------|---------------|--------------|----------------|
| 4 YEAR OLD CHILD  |               |              |                |
| 25 YEAR OLD ADULT |               |              |                |

Q3. Fill in the blanks:

- (a) The process of taking food into the body is called \_\_\_\_\_.
- (b) Saliva changes starch into \_\_\_\_\_.
- (c) Harmful bacteria in mouth act on left over food and release \_\_\_\_\_, which causes \_\_\_\_\_.
- (d) The alimentary canal stretches from \_\_\_\_\_ to \_\_\_\_\_.
- (e) \_\_\_\_\_ and \_\_\_\_\_ together constitutes the digestive system.
- (f) The term given for “Breakdown of complex component of food into simpler Substances” is \_\_\_\_\_.
- (g) Main digestive glands associated with digestive system are \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_.
- (h) Inner wall of \_\_\_\_\_ & \_\_\_\_\_ also secrete digestive juices.
- (i) The \_\_\_\_\_ is fleshy muscular organ attached to the floor of buccal cavity.
- (j) Each tooth is rooted in a separate socket in the \_\_\_\_\_.

Q4. Complete the table :

| TYPE OF TEETH | TOTAL NO. | FUNCTION         |
|---------------|-----------|------------------|
| Incisor       | 4 + 4     | _____ & _____    |
| _____         | _____     | Piercing & _____ |
| Premolar      | _____     | _____ & crushing |
| Molar         | _____     | Chewing & _____  |

Q5. Choose the correct option:

- (i) The lining of stomach is protected with the help of:
- |                       |             |
|-----------------------|-------------|
| (a) Hydrochloric acid | (b) Mucous  |
| (c) Saliva            | (d) Enzymes |
- (ii) Bile juice help in digestion of:
- |                   |              |
|-------------------|--------------|
| (a) Carbohydrates | (b) Proteins |
| (c) Minerals      | (d) Fats     |
- (iii) Complete digestion of food takes place in:
- |                     |                     |
|---------------------|---------------------|
| (a) Stomach         | (b) Large Intestine |
| (c) Small Intestine | (d) Liver           |

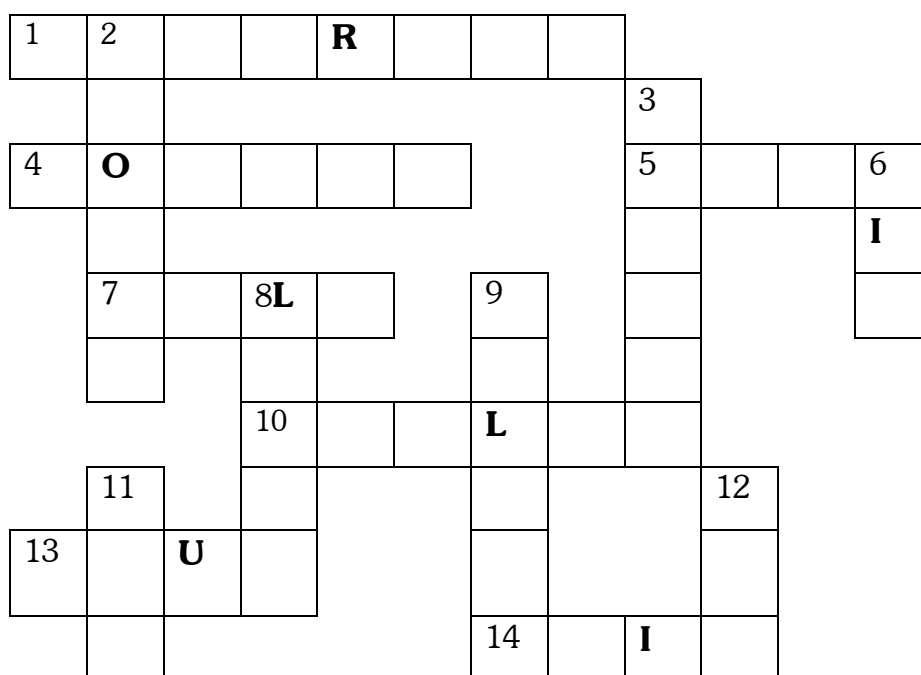
Q6. Solve the cross word puzzle:

**ACROSS**

1. Cream coloured digestive gland
4. Organ that tastes food
5. Last part of alimentary canal
7. Stored in gall bladder
10. Finger like outgrowth in small intestine
13. A kind of taste
14. Kills bacteria in stomach

**DOWN**

2. Feeds with the help of pseudopodia
3. Undigested excretory solid residues
6. Number of molars in one jaw of man
8. Secretes bile juice
9. Watery secretion in mouth
11. A ruminant
12. Form of food restfully chewed by Ruminant



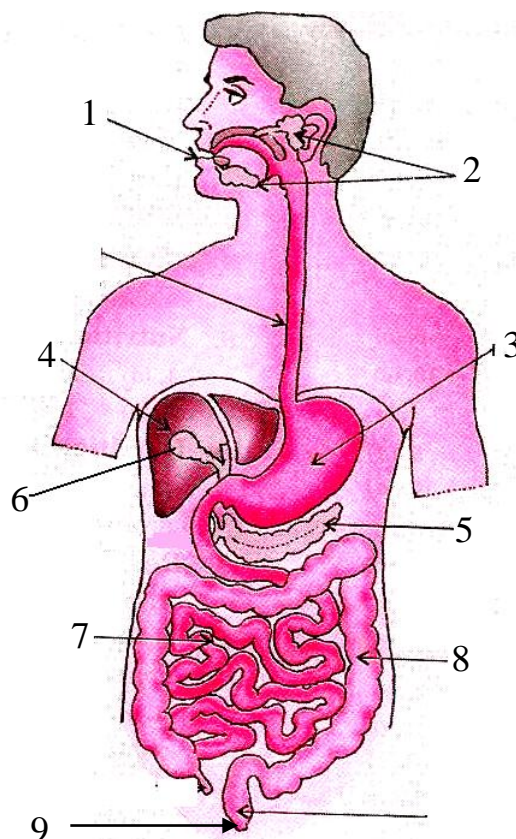
Q7. Complete the table:

| <b>SECRETIONS</b><br>(from inner lining of stomach) | <b>FUNCTIONS</b>                                                                                 |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Mucous                                              | Protect the lining of _____ from HCl                                                             |
| Hydrochloric acid (HCl)                             | i) Kills _____ that enter along with food<br>ii) Makes the medium _____ which helps _____ to act |
| Digestive juice                                     | _____                                                                                            |

Q.8. In the given diagram of Human Digestive System, name & label the part involved in:

- (i) Ingestion of food
- (ii) Secretion of saliva
- (iii) Secretion of hydrochloric acid
- (iv) Secretion of bile
- (v) Secretion of pancreatic juice

- (vi) Storage of bile
- (vii) Absorption of food
- (viii) Absorption of water & some salts from undigested food
- (ix) Removal of undigested food from the body



Q9. Fill in the blanks:

- (i) The digestive juice which completes the digestion of all components of food in small intestine is called \_\_\_\_\_.
- (ii) After complete digestion , products formed are
  - (a) Carbohydrates break down to \_\_\_\_\_
  - (b) Proteins break down to \_\_\_\_\_
  - (c) Fats break down to \_\_\_\_\_ & \_\_\_\_\_
- (iii) The function of large intestine is to absorb \_\_\_\_\_ & \_\_\_\_\_ from undigested food material
- (iv) Grass eating animals which chew cud & digest \_\_\_\_\_ are called \_\_\_\_\_.
- (v) Human beings \_\_\_\_\_ (can /can't) digest cellulose as they \_\_\_\_\_ (have/don't have) cellulose digesting bacteria in their digestive tract.

Q10. Complete the steps of:

(i) Digestion in grass eating animals (ruminants)

- (a) Ruminants quickly swallow grass & store it in \_\_\_\_\_ (part of stomach).
- (b) Here the food gets partially digested & is called \_\_\_\_\_.
- (c) Partly digested food return to \_\_\_\_\_ in small lumps & animal chews it. This process of chewing of \_\_\_\_\_ is called \_\_\_\_\_.
- (d) Cellulose present in \_\_\_\_\_ is digested with the help of certain \_\_\_\_\_, present in \_\_\_\_\_ (sac like structure between small intestine & large intestine).

(ii) Nutrition in Amoeba

- (a) Amoeba captures and ingests food using \_\_\_\_\_.
- (b) Food is digested in a cavity called \_\_\_\_\_.
- (c) Digested food is \_\_\_\_\_ into cytoplasm.
- (d) Absorbed \_\_\_\_\_ substances \_\_\_\_\_ are \_\_\_\_\_ assimilated \_\_\_\_\_ for \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_.
- (e) Undigested food is egested out by \_\_\_\_\_.

~~~~~

### **QUESTION BANK**

- Q.1. Name all the parts of alimentary canal or digestive tract in a sequential manner through which food passes for digestion (should be written as a flow chart). Draw a neat and labelled diagram of human digestive system. [hint: pg12, NCERT, 1<sup>st</sup> colm, last para, fig- 2.2 pg 12, NCERT]
- Q.2. What are the steps included in animal nutrition? [hint: pg- 11, NCERT, 1<sup>st</sup> colm, 1<sup>st</sup> para, for animal nutrition, draw and complete the table]

STEPS OF NUTRITION	DEFINE	ORGAN /ASSOCIATED GLANDS
Ingestion		
Digestion		
Absorption		

Assimilation		
Egestion		

Q.3. Name the glands associated with human digestive tract. How do these glands help in digestion? [hint: do in tabulated form under following headings?]

Name of gland	Location	Secretion produced	Function of secretion
---------------	----------	--------------------	-----------------------

Q.4. (i) In which part of the alimentary canal neither digestion nor absorption of food takes place ?[hint: Oesophagus]

(ii) What are villi? What is their location and function? [hint: NCERT page 17, 1<sup>st</sup> colm.,2<sup>nd</sup> para]

Q.5. Which two organ systems help the digestive system in deriving energy from food? [hint : Circulatory and respiratory system. Write the role of each of these systems]

Q.6. (i) What is formed after complete digestion of different components of food ? . [Hint. complete digestion of food occurs in small intestine with the help of intestinal juice. Also add from module 3 & 4, Q.9 (ii) part of assignment booklet]

(ii)Why do we get instant energy from glucose ? [hint : Glucose is the simplest form of food component, its breakdown becomes easy to provide us with instant energy]

Q.7. (i) Name the type of carbohydrate that can be digested by ruminants but not by humans. Give reasons also.[hint : NCERT page 18,2<sup>nd</sup> colm.,1<sup>st</sup> para]

(ii) Draw neat and labelled images of digestion in ruminants. [hint: fig. 2.9 and 2.10, pg-18, NCERT]

Q.8. (i) Write one similarity and one difference between nutrition in amoeba and human beings. [Hint. : similarity- both show all steps of nutrition and secrete digestive juices. Difference – Humans have digestive system,an organ system for digestion while in amoeba the digestion occurs in a single cell]

(ii) Illustrate nutrition in amoeba with the help of flow chart. [hint: module 3 & 4, Q.10 (b) part of assignment booklet]

Q.9. Can humans survive only on raw, leafy, vegetables or grass? [hint: No, since humans don't have cellulose digesting bacteria, so no energy will be provided]

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## **CHAPTER: WEATHER, CLIMATE AND ADAPTATIONS OF ANIMALS TO CLIMATE**

### **MODULE-5 & 6**

#### **CONTENTS:**

- Weather, Elements of weather
- Climate
- Climate & adaptation
- Polar region & tropical rainforest
- Adaptations of animals to survive in these regions

=====

Q1. Fill in the blanks:

- Rainfall is measured by an instrument called \_\_\_\_\_ & the unit in which it is measured is \_\_\_\_\_.
- The four main elements of weather are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, & \_\_\_\_\_.
- \_\_\_\_\_ is the primary source of energy that causes changes in weather.
- \_\_\_\_\_ is the weather conditions of a place over a long period of time.
- The scientists who study & forecast weather are called \_\_\_\_\_.
- Minimum temperature of the day is likely to occur during \_\_\_\_\_ while maximum temperature is likely to occur during \_\_\_\_\_.
- Maximum & minimum temperature of the day are recorded by \_\_\_\_\_.
- \_\_\_\_\_ (weather/climate) may change frequently & even from hour to hour.
- \_\_\_\_\_ (weather/climate) remain same for many years.
- The two regions of earth having extreme climatic conditions are \_\_\_\_\_ & \_\_\_\_\_.

Q2. Categorise the following:

- Places as polar regions / tropical rainforests- Indonesia, Canada, Greenland, Iceland, Norway, India, Alaska, Congo, Kenya, Siberia, Uganda, Nigeria
- Animals as polar animals/ tropical animals/ migratory birds- Lion, Reindeer, Musk oxen, Red eyed frog, Beard ape, Seal, Whale, Siberian crane, snake, leopard, Arctic tern, Elephant

Q3. Fill in the blanks:

- (i) Tropical region are characterized by \_\_\_\_\_ & \_\_\_\_\_ climate.
- (ii) The presence of specific features or certain habits which enable a plant or an animal to live in its surroundings is called \_\_\_\_\_.
- (iii) Penguins \_\_\_\_\_ together to keep themselves warm.
- (iv) The elephant is well adapted to live in \_\_\_\_\_.
- (v) In India tropical rainforests are found in \_\_\_\_\_ & \_\_\_\_\_.
- (vi) Tropical rainforests support wide variety of plants & animals due to its \_\_\_\_\_ & \_\_\_\_\_ climate.

Q4. Match the following:

- |                                 |                                  |
|---------------------------------|----------------------------------|
| (a) Climate of north east India | (i) Rainforests of western ghats |
| (b) Red eyed frog               | (ii) Wet                         |
| (c) Siberian crane              | (iii) Toucan                     |
| (d) Lion tailed macaque         | (iv) Bharatpur in Rajasthan      |
| (e) Large long beak             | (v) sticky pad                   |

Q5. Write the adaptive features of Polar bear & Penguin which,

|                        | Polar bear | Penguin |
|------------------------|------------|---------|
| Protect them from cold |            |         |
| Help them to swim      |            |         |

Q6. Write the adaptive feature of Polar bear which help it to,

|                     | Adaptive feature |
|---------------------|------------------|
| Catch its prey      |                  |
| Walk on ice         |                  |
| Walk easily on snow |                  |

Q7. Give the adaptation of following animals of tropical rainforests

| ANIMALS                | ADAPTIVE FEATURE | REASON |
|------------------------|------------------|--------|
| Red eyed frog          |                  |        |
| Toucan                 |                  |        |
| Big cats(Lion & Tiger) |                  |        |
| Monkeys                |                  |        |

**QUESTION BANK**

Q.1. (i) Define Weather and its elements.

(ii) What is Climate? Which of the two changes frequently, Weather or Climate?

[Hint. Pg-69,71,NCERT]

Q.2. Explain with example why do we find animals of certain kind living in particular Climatic conditions? [Hint. Pg-72, NCERT, 1<sup>st</sup> colum, 4<sup>th</sup> para. Also include examples of animals and their adaptations in both polar and tropical regions]

Q.3. (i) What are migratory birds? Name a migratory bird. Why & where does it migrate to in winter? [Hint. Pg- 74, 2<sup>nd</sup> colm. 1<sup>st</sup> para]

(ii) Which factors help the migratory birds travelling to the same place year after year? [hint: pg-74, blue box, NCERT]

Q.4. (i) The tropical rainforests have a large population of animals. Explain with reason.

[hint: pg 75, NCERT, 1<sup>st</sup> colum]

(ii) How do elephants, living in the tropical rainforests adapt themselves. (Hint. Pg- 76, NCERT.)

Q.5. Give any two differences between Polar region & Tropical region on basis of their climate conditions.

Q.6. Do Q. 5,6,7 of module 5 & 6 of assignment booklet in notebooks.

Q.7. Write the advantages of following features/ habits found in these animals.

- (i) Presence of white fur on penguin's & polar bear's body. [Hint: camouflage]
- (ii) Lion tailed Macaque spends its more time on the trees & rarely comes down on the ground. [Hint: is able to get sufficient food on the trees]

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## **CHAPTER: RESPIRATION IN ORGANISMS**

### **MODULE-7 & 8**

#### **CONTENTS:**

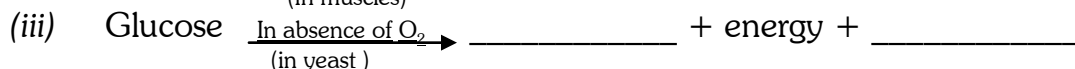
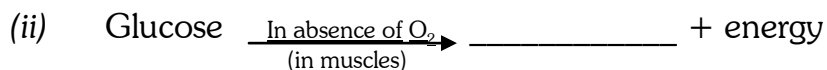
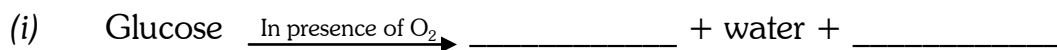
- Why do we respire?
- Aerobic/ anaerobic respiration
- Breathing, its mechanism
- Breathing in other animals
- Breathing & respiration in plants

=====

Q1. Fill in the blanks:

- (i) The taking in of air rich in oxygen into the body is called \_\_\_\_\_ and giving out of air rich in carbon dioxide is known as \_\_\_\_\_.
- (ii) Yeast are \_\_\_\_\_ organisms and they respire \_\_\_\_\_.
- (iii) A breath means one \_\_\_\_\_ plus one \_\_\_\_\_.
- (iv) A large muscular sheet called \_\_\_\_\_ forms the floor of chest cavity.
- (v) Accumulation of \_\_\_\_\_ causes muscle cramps.
- (vi) The process of release of energy by breakdown of food is called \_\_\_\_\_.
- (vii) All living organisms respire to get \_\_\_\_\_ from food, which can be utilised for various \_\_\_\_\_ processes.
- (viii) The two steps of aerobic respiration are \_\_\_\_\_ & \_\_\_\_\_.
- (ix) Main organs of human respiratory system in sequence are: Nostrils, \_\_\_\_\_ cavity, \_\_\_\_\_ (windpipe), \_\_\_\_\_, lungs, \_\_\_\_\_.
- (x) While exercising we breathe faster to inhale more \_\_\_\_\_.

Q.2. Complete the following equations –



Q.3. Choose the correct option:

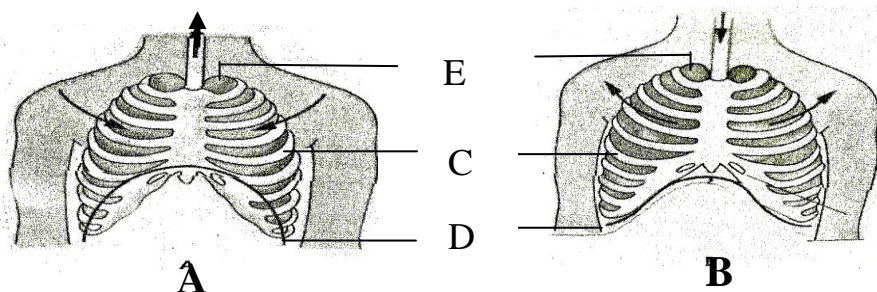
(i) During cellular respiration (aerobic), glucose is broken down into:

- (a) Alcohol,  $\text{CO}_2$ , energy  
(b)  $\text{CO}_2$  & energy  
(c)  $\text{CO}_2$  & Water  
(d)  $\text{CO}_2$ , energy & water

(ii) In which of the following cases will the rate of breathing be slowest:

- (a) Reading  
(b) Eating  
(c) Sleeping  
(d) Brisk walking

Q4. Observe the given figure & answer the following questions



(i) Given figure represents

(ii) Which of following figures A or B , represents inhalation?

(iii) Label C, D, E.

(iv) Complete the table showing the mechanism of breathing.

MECHANISM	DURING INHALATION	DURING EXHALATION
Ribs move	_____ & outward	Down & _____
Diaphragm moves	_____	_____
Chest cavity	_____	_____
Air	Rushes into lungs	Pushed _____ of lungs

Q5. Give one word answer –

- (i) Small opening in plants for gaseous exchange.
- (ii) The air tubes of insects.
- (iii) An organism with tracheal system.
- (iv) Small opening on the sides of the body of an insect.

Q6. Name the organ of respiration in the following-

- (i) Cockroach
- (ii) Earthworm
- (iii) Human beings
- (iv) Fish
- (v) Whales & Dolphins
- (vi) Birds
- (vii) Snake
- (viii) Lizard
- (ix) Plants
- (x) Lion

Q7. Complete the table.

	INHALED AIR	EXHALED AIR
% OF OXYGEN		
% OF CARBON DIOXIDE		

Q8. Fill in the blanks

- (i) During respiration plants take in \_\_\_\_\_ & release \_\_\_\_\_.
- (ii) Frogs can breathe through \_\_\_\_\_ as well as \_\_\_\_\_.
- (iii) Roots absorb \_\_\_\_\_ needed for respiration from space between \_\_\_\_\_ particles.
- (iv) Lime water  $[Ca(OH)_2]$  turns \_\_\_\_\_  $[CaCO_3]$  when we exhale into it, as exhaled air contain more \_\_\_\_\_ than inhaled air.

Q9. Differentiate between:

	Aerobic respiration	Anaerobic respiration
1. Presence/ Absence of oxygen		
2. Equation		

3. Examples		
4. Breakdown of food		
5. Energy released		

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**QUESTION BANK**

- Q.1. (i) How is Cellular Respiration different from breathing? (Hint. Pg- 108, 109, NCERT in tabulated form including 2 points i.e. definition & energy release)  
(ii) What are the 2 types of Cellular Respiration? Differentiate between them. (Hint. Module 7 & 8, Q.9, Assignment booklet)
- Q.2. (i) Why do we suffer from muscle cramps after heavy exercise? (Hint. Pg- 109, NCERT, write equation also)  
(ii) How does hot water bath or massage give relief from cramps? (Hint. Pg- 109, 2<sup>nd</sup> colm. 1<sup>st</sup> para.)
- Q.3. Draw neat & labelled diagram of human respiratory system, with the help of a flow chart, write the names of its various organs, through which air passes during breathing in a sequential manner. (Hint: fig. 10.4, pg-112, NCERT)
- Q.4. Give reasons:
- (i) Why does an athlete breathe faster & deeper than usual after finishing race? (Hint: more O<sub>2</sub> supplied, breakdown of food speeds up to release more energy]
  - (ii) Why do we often sneeze when we inhale a lot of dust laden air? ( Hint: pg- 112, NCERT, Blue box)
- Q.5. How do various organisms exchange gases O<sub>2</sub> & CO<sub>2</sub> during breathing? (pg-115, 116 of NCERT, including aquatic organisms, Amphibians and Terrestrial organisms, giving different examples).
- Q.6. How do plants respire? (Hint- pg-116, NCERT)
- Q.7. Explain what happens when-
- (i) We exhale into lime water. (Hint- lime water turns milky)
  - (ii) A potted plant is overwatered. (hint- roots will not be able to breathe)
  - (iii) Vaseline is applied on the surface of leaves of a potted plant. (It prevents photosynthesis, respiration as well as transpiration)

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**MODULE – 9**

***Revision For Half Yearly Examinations***

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**CHAPTER: TRANSPORTATION IN ANIMALS AND PLANTS**

**MODULE-10, 11 &12**

**CONTENTS:**

- Human circulatory system
  - Heart – structure and function
  - Human excretory system
  - Dialysis
  - Transportation of substances in plants- xylem, phloem
- =====

Q.1. Match the following –

- |                           |                                                        |
|---------------------------|--------------------------------------------------------|
| (i) W.B.C.                | (a) Chambers of Heart                                  |
| (ii) Veins                | (b) Red pigment of blood which carries oxygen in blood |
| (iii) Haemoglobin         | (c) William Harvey                                     |
| (iv) Stethoscope          | (d) CO <sub>2</sub> rich blood                         |
| (v) Ventricles            | (e) Heart beat                                         |
| (vi) Circulation of blood | (g) Fluid part of blood                                |
| (vii) Plasma              | (f) Fight germs                                        |

Q2. Fill in the blanks:

- (i) Human circulatory system consists of \_\_\_\_\_, \_\_\_\_\_  
& \_\_\_\_\_.
- (ii) Three main type of blood vessels are \_\_\_\_\_, \_\_\_\_\_,  
& \_\_\_\_\_.
- (iii) Arteries and veins are joined by a network of \_\_\_\_\_.
- (iv) Blood consist of \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

- (v) The rhythmic contraction and expansion of heart is called \_\_\_\_\_
- (vii) Human heart has \_\_\_\_\_ chambers, upper two chambers of heart are called \_\_\_\_\_ & the lower two chambers of heart are called \_\_\_\_\_.
- (viii) \_\_\_\_\_ (arteries/ veins) carry blood away from heart, while \_\_\_\_\_ (arteries/ veins) carry blood towards the heart.
- (ix) Each heartbeat generates \_\_\_\_\_ pulse in the arteries.
- (x) The \_\_\_\_\_ between chambers separate heart into two halves which prevent mixing of \_\_\_\_\_ & \_\_\_\_\_ blood.
- (xi) The animals which do not possess any circulatory system are \_\_\_\_\_ & \_\_\_\_\_.

Q3. Give one word answer:

- (i) Instrument used by doctors to amplify the sound of heart
- (ii) Side of the heart having oxygen rich blood
- (iii) Circulatory fluid in human
- (iv) Throbbing movement due to blood flow in arteries

Q4. Complete the table

| CONSTITUENTS | CHARACTERISTICS                         | F UNCTION                                                                                           |
|--------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------|
| Plasma       | _____ part of blood,<br>_____ in colour | Carries/ transports water, digested_____, waste products.<br>R.B.C, _____, & platelets float in it. |

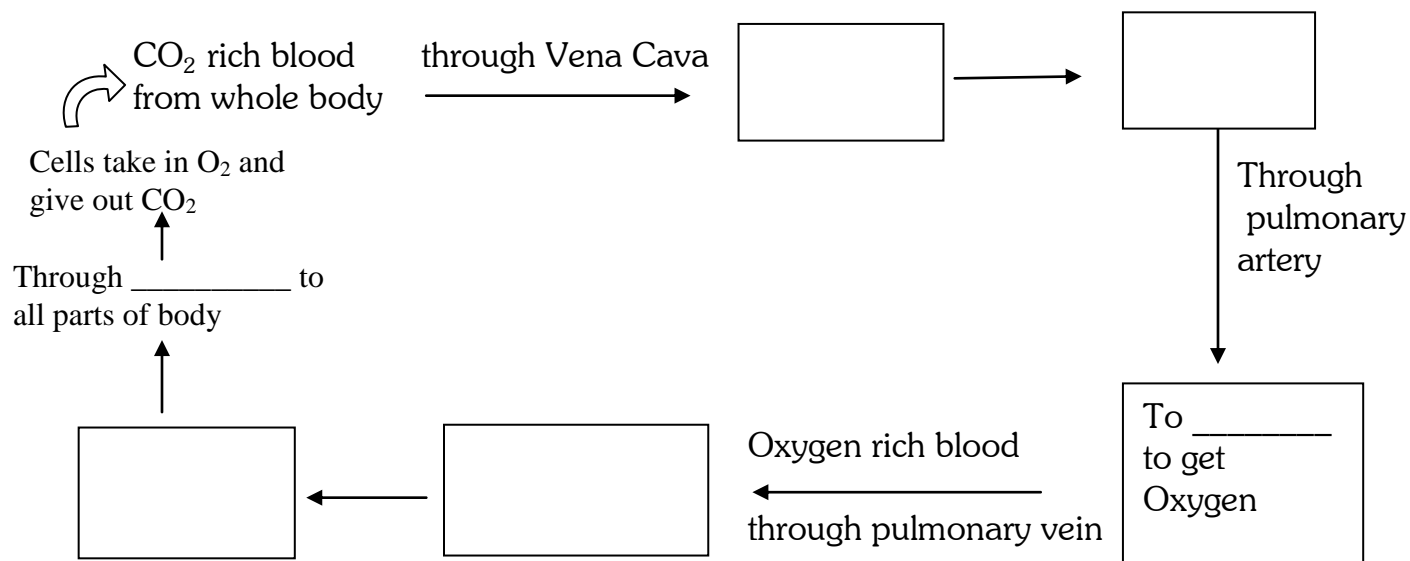
|                           |                                                                               |                                                                              |
|---------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Red blood cells (R.B.C)   | Contain red coloured pigment called _____, Disc shaped, largest in number     | _____ in R.B.C binds & transports _____ to all parts of body.                |
| White blood cells (W.B.C) | _____ in size than R.B.C, _____ in no. than R.B.C and can change their shape. | Fight against _____ that may enter our body.                                 |
| Platelets                 | _____ in size & _____ in no. than R.B.C                                       | These cells help in _____ of blood to prevent blood _____ in case of injury. |

Q5. Differentiate between:

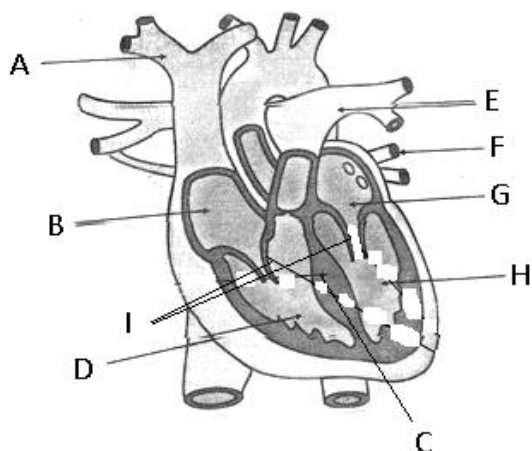
|                                                             | Artery                                                        | Vein                                                                |
|-------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------|
| 1. Direction of flow of blood                               | Vessels which carry blood from _____ to all parts of the body | Vessels which carry blood from all parts of the _____ back to heart |
| 2. Type of blood: O <sub>2</sub> rich/ CO <sub>2</sub> rich | Generally carry _____ rich blood                              | Generally carry _____ rich blood                                    |
| 3. Exception                                                |                                                               |                                                                     |
| 4. Type of wall                                             | Have thick, _____ wall                                        | Have _____ wall                                                     |

|                                 |                           |                 |
|---------------------------------|---------------------------|-----------------|
| 5. Location in body             | There are _____<br>seated | There are _____ |
| 6. Valve present/ absent        |                           |                 |
| 7. Speed of blood flow          |                           |                 |
| 8. Pressure                     |                           |                 |
| 9. Pulse observed/ not observed |                           |                 |

Q6. Complete the flow chart showing circulation of blood.



Q7. Label the diagram showing sections of human heart.



Q8. Fill in the blanks

- (i) The major excretory product in human beings is \_\_\_\_\_.
- (ii) The process used for separating waste products from the blood using artificial kidney is called \_\_\_\_\_.
- (iii) The process of removal of waste produced in cells of living organisms is called \_\_\_\_\_.
- (iv) Sweat contains \_\_\_\_\_ & \_\_\_\_\_ along with water.
- (v) The urine consists of \_\_\_\_\_ % water, \_\_\_\_\_ % urea & \_\_\_\_\_ % other waste products.
- (vi) It is necessary to excrete waste because they are \_\_\_\_\_ and thus harmful for our body.
- (vii) Human excretory system consists of a pair of \_\_\_\_\_, a pair of \_\_\_\_\_, a \_\_\_\_\_ & \_\_\_\_\_.
- (viii) Filtration of blood to remove waste is done by the blood capillaries in \_\_\_\_\_. (ureter/ kidney)
- (ix) Sweating helps to \_\_\_\_\_ (heat/ cool) our body.

Q9. Name the waste chemicals excreted by the following animals:

- |              |             |
|--------------|-------------|
| (i) Fish     | (ii) Lizard |
| (iii) Humans | (iv) Birds  |

Q10. Complete the information showing the working of human excretory system.

- (i) Each kidney consists of tiny filtering units called \_\_\_\_\_.

- (ii) Kidney \_\_\_\_\_ the blood.
- (iii) From filtrate useful substances like glucose, amino acids are \_\_\_\_\_ into blood.
- (iv) The waste products like \_\_\_\_\_, \_\_\_\_\_ & excess water are formed into urine.
- (v) Urine is carried by two \_\_\_\_\_ & stored in \_\_\_\_\_.
- (vi) Urine is passed out from the body through \_\_\_\_\_.

Q11. State true or false & correct the false statement.

- (i) Xylem conducts food in plants.
- (ii) Transpiration is responsible to pull water to great heights in tall trees.
- (iii) All the water absorbed by plant is utilized by the plant.
- (iv) Transpiration cools the plant.
- (v) Leaves help in absorption of water in plants.

Q12. Differentiate between:

|                           | <b>Xylem</b>               | <b>Phloem</b>        |
|---------------------------|----------------------------|----------------------|
| 1. Substance transported  | Transports _____ and _____ | Transports _____     |
| 2. Direction of transport | From _____ to leaves       | From leaves to _____ |
| 3. Process involved       |                            | Translocation        |

Q13. Fill in the blanks:

- (i) A \_\_\_\_\_ is a group of cells that perform specialised function.
- (ii) \_\_\_\_\_ increases the surface area of absorption of water & minerals from the soil.
- (iii) Xylem & phloem are called \_\_\_\_\_ tissue.
- (iv) The process of loss of water in the form of \_\_\_\_\_ through \_\_\_\_\_ on the leaves is called transpiration.
- (v) The process which creates suction pull for upward movement of water through xylem is \_\_\_\_\_.

- (vi) Tiny pores on the surface of leaves are called \_\_\_\_\_, which help in \_\_\_\_\_ of gases & \_\_\_\_\_.

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**QUESTION BANK:**

- Q1. Why is blood needed by all body parts?  
Or  
Why do living organisms(plants & animals) need a transport system?  
(Hint. 121, 1<sup>st</sup> para, To transport \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ to cells  
To carry away harmful \_\_\_\_\_ produced in their bodies)
- Q2. What is the composition of blood? Explain the characteristics features and functions of each of its component. (Hint : Module 10, 11, 12 Q. 4 of Assignment booklet)
- Q3. (i) Differentiate between arteries & veins. (Hint : Module 10, 11, 12 Q.5 of Assignment booklet)  
(ii) What are capillaries? Give their location & function. (Hint. pg- 123, 2<sup>nd</sup> colm. 1<sup>st</sup>para NCERT. Location- present inside organs, Function- help in exchange of materials eg. food, waste, oxygen, CO<sub>2</sub> between blood & cells of body.)
- Q4. Draw the structure of the heart. Describe the location, structure and functions of heart. (Hint : Fig. No. 11.4 pg no. 123, 124 of NCERT)
- Q5. Define  
(i) Pulse - (Hint. pg- 122, 2<sup>nd</sup> colm. NCERT)  
(ii) Pulse Rate - (Hint. pg- 122, 2<sup>nd</sup> colm. NCERT)  
(iii) Heart Beat- (Hint. pg- 125, 1<sup>st</sup> para.NCERT)  
(iv) Stethoscope- (Hint. pg- 125, 2<sup>nd</sup> para.NCERT)  
(v) Transpiration
- Q6. Define the term excretion. Why is it necessary to excrete waste products? (Hint : pg – 126, NCERT 2<sup>nd</sup> colm)
- Q7. (i) Draw a diagram of human excretory system and label its various parts.  
(Hint : pg – 127 NCERT, fig. no. 11.6)  
(ii) Describe the working of human excretory system.  
(Hint : Q 10 of Assignment booklet)

- (iii) Define dialysis. When is dialysis required by body? (Hint : pg-127 NCERT)
- Q8. What is the role of (i) root hair (ii) Valves? (Hint : pg – 128 NCERT)
- Q9. What are vascular tissue? Name two types of vascular tissue & differentiate between them. (Hint. Tissue which transport \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ to different parts in plants is called \_\_\_\_\_ tissue.  
Two types:Pg-129, label fig 11.7(b) pg-128 NCERT)
- Q10. What helps in transport of substances in the body of sponges and hydra? (Hint : pg-126 NCERT)

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## **CHAPTER: REPRODUCTION IN PLANTS**

### **MODULE-13 & 14**

#### **CONTENTS:**

- Asexual reproduction in plants
- Sexual reproduction: flower
- Self/ cross pollination
- Fertilization
- Dispersal of seeds

=====

Q1. Fill in the blanks:

- (i) The reproductive part of the plant is\_\_\_\_\_.
- (ii) The vegetative parts of plant are \_\_\_\_\_,\_\_\_\_\_,\_\_\_\_\_.
- (iii) Production of new individuals from the vegetative part of parent plant is called \_\_\_\_\_.
- (iv) The part of the stem at which leaf arises is called \_\_\_\_\_.
- (v) A short stem surrounded by immature, overlapping leaves is \_\_\_\_\_ bud. It is generally present in leaf\_\_\_\_\_.
- (vi) Spore forming bodies of fern are called \_\_\_\_\_, while spore forming bodies of Bread mould are called \_\_\_\_\_.

Q2. Name the method of asexual reproduction in:

- |               |                  |
|---------------|------------------|
| (i) Spirogyra | (iv) Bryophyllum |
| (ii) Fern     | (v) Potato       |
| (iii) Yeast   | (vi) Bread mould |

(vii) Rose

(viii) Money plant

Q3. Match the following –

- |                        |                     |
|------------------------|---------------------|
| (i) Eyes               | (a) Bryophyllum     |
| (ii) Cutting           | (b) Bread Mould     |
| (iii) Spores           | (c) Potato          |
| (iv) Leaf Buds         | (d) Rose            |
| (v) Egg                | (e) Female gamete   |
| (vi) Stamen and pistil | (f) Bisexual flower |
| (vii) Style            | (g) Pistil          |
| (viii) Fusion          | (h) Gamete          |

Q4. Complete the table

| VEGETATIVE PROPAGATION |                      | EXAMPLES                                |
|------------------------|----------------------|-----------------------------------------|
| BY STEM                | i) aerial stem       | Rose, _____, _____                      |
|                        | ii) underground stem | Potato, _____, _____                    |
| BY ROOT                |                      | _____, _____                            |
| BY LEAVES              |                      | _____                                   |
| IN CACTUS              |                      | Each _____ part develop into new plant. |

Q5. With the help of given clue identify the method of asexual reproduction.

- (i) In this method a small bulb like projection called bud grows out of parent organism which then detaches & becomes a new organism.

Method: \_\_\_\_\_, Example: \_\_\_\_\_.

- (ii) The breaking up of plant body into two or more fragments, each of which grows to form new individual plant. Method: \_\_\_\_\_,

Example: \_\_\_\_\_.

- (iii) Production of spores covered by hard protective coat, which germinates under favourable conditions to develop into new individuals.

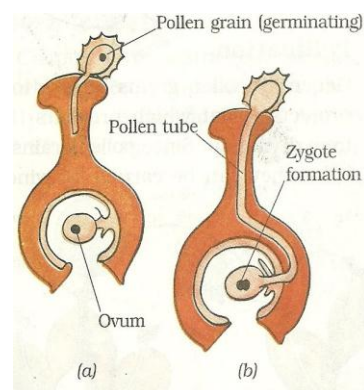
Method: \_\_\_\_\_, Example: \_\_\_\_\_.

Q6. Choose the correct option:

- (i) It produces unisexual flower  
(a) Rose (c) Papaya  
(b) Petunia (d) Fern
- (ii) Seed production in plants is the result of  
(a) Sexual reproduction (b) Spore formation  
(c) Budding (d) Fragmentation
- (iii) It produces bisexual flower.  
(a) Corn (c) Rose  
(b) Mustard (d) Both (b) and (c)
- (iv) Transfer of pollen grains from anther to stigma of same flower is called  
(a) Pollination (c) Self pollination  
(b) Fertilization (d) Cross pollination
- (v) Transfer of pollen grains from anther to stigma of another flower of same plant or different plant of same kind is called  
(e) Pollination (g) Self pollination  
(f) Fertilization (h) Cross pollination
- (vi) Which of these is the male reproductive organ in plants  
(a) Pistil (c) Pollen grain  
(b) Stamen (d) Ovule

Q7. Observe the figure & complete the steps showing the process of fertilization in plants.

- (i) Pollen grain lands on \_\_\_\_\_.
- (ii) Pollen \_\_\_\_\_ is formed & it carries male gamete. Pollen \_\_\_\_\_ grows through style & reaches \_\_\_\_\_.
- (iii) Pollen tube containing \_\_\_\_\_ gamete enter \_\_\_\_\_ & fuse with \_\_\_\_\_ gamete(egg) to form \_\_\_\_\_.
- (iv) This process of fusion of male & female \_\_\_\_\_ to form \_\_\_\_\_.



is called \_\_\_\_\_.

Q8. Fill in the blanks:

- (i) Seed contains \_\_\_\_\_ enclosed in a protective seed coat.
- (ii) After fertilization,
  - a) Zygote( fertilized egg) develops into \_\_\_\_\_.
  - b) Ovary grows into \_\_\_\_\_.
  - c) Ovules develop into \_\_\_\_\_.
- (iii) Dispersal of seeds means to \_\_\_\_\_ seeds over a wide area.
- (iv) Three agents of pollination are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.
- (v) Three agents of seed dispersal are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

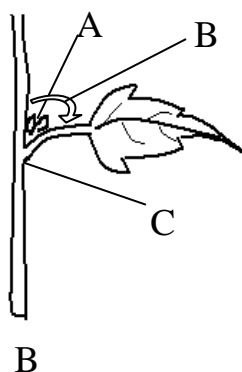
Q9. Give examples of seeds, dispersed by –

- (i) Animals      (ii) Wind      (iii) Water      (iv) Explosive mechanism

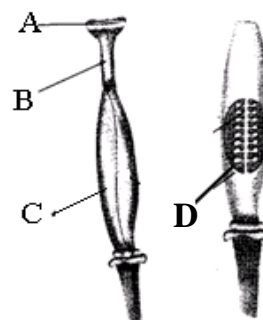
Q10. Identify the diagram & label it



A



B



C

Q11. Name the plant which has

- (i) Winged seed
- (ii) Hairy seed
- (iii) Light seed
- (iv) Hairy fruit

Q.12. Give difference between:

(i)

| CHARACTERSTICS                                                           | ASEXUAL<br>REPRODUATION | SEXUAL<br>REPRODUCTION |
|--------------------------------------------------------------------------|-------------------------|------------------------|
| 1) Seeds produced /not                                                   |                         |                        |
| 2) no. of parents                                                        |                         |                        |
| 3) gametes formed / not                                                  |                         |                        |
| 4)fertilization occurs /not                                              |                         |                        |
| 5) new individuals- identical to parents/ characters of both the parents |                         |                        |

(ii)

| CHARACTERSTICS                            | STAMEN | PISTIL |
|-------------------------------------------|--------|--------|
| Male part/female part                     |        |        |
| Name its parts                            |        |        |
| Part containing male gamete/female gamete |        |        |

(iii)

|                     | UNISEXUAL | BISEXUAL |
|---------------------|-----------|----------|
| Define              |           |          |
| Type of pollination |           |          |
| Example             |           |          |

(iv)

|                             | SELF POLLINATION               | CROSS POLLINATION |
|-----------------------------|--------------------------------|-------------------|
| Define                      |                                |                   |
| Agents of pollination       |                                |                   |
| Unisexual/ bisexual flowers |                                |                   |
| Flower features             | Less showy, no scent or nectar |                   |

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## **QUESTION BANK**

- Q1. (i) What is reproduction? Why it is important? (Hint. pg- 133, 1<sup>st</sup> para NCERT.)  
(ii) What are the different modes of reproduction? Differentiate between them. (Hint. Module 13, 14 Q.13 1<sup>st</sup> part of Assignment booklet)
- Q2. (i) Define vegetative propagation. Give its examples. (Hint. pg-133, 134, 135 NCERT)  
(ii) What are the advantages of vegetative propagation? (Hint. Pg-133, 134, 135 NCERT)
- Q3. Explain the following terms and give example of each :  
(i) Budding (ii) Fragmentation  
(iii) Spore formation (Hint : module 13, 14 Q.5 of Assignment booklet.  
Also draw diagram from NCERT)
- Q4. (i) What is a flower? State its role in plant reproduction.  
(ii) Draw a well labeled diagram of flower. (Hint. Pg-136 NCERT)
- Q5. Differentiate between :  
(i) Stamen and Pistil  
(ii) Unisexual and Bisexual flower  
(Hint. Module 13, 14 Q. 13 of Assignment booklet)
- Q6. Define pollination. Differentiate between self and cross pollination. (Hint. Module 13, 14 Q. 13 of Assignment booklet)
- Q7. (i) With the help of diagram explain how a male gamete in pollen grain reaches female gamete to bring about fertilization. (Hint. Module 13, 14 Q. 8 of Assignment booklet)  
(ii) What changes are observed in the flower after fertilization? (Hint. Pg-138 NCERT)

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**CHAPTER: FORESTS OUR LIFELINE**

**MODULE-15 & 16**

**CONTENTS:**

- Interdependence of plants & animals
- Crown, canopy, understorey
- Decomposers
- Conservation of forests

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Q1. Fill in the blanks:

- (i) In a forest, \_\_\_\_\_ form the uppermost layer, followed by \_\_\_\_\_ and \_\_\_\_\_ forms the lowermost layer of vegetation.
- (ii) All animals whether herbivore or carnivore depend ultimately on \_\_\_\_\_ for food.
- (iii) Microorganisms act on dead plants and animals to produce \_\_\_\_\_.
- (iv) Decomposers help in maintaining the supply of \_\_\_\_\_ to the growing plants in the forest.
- (v) Living organisms show interdependence in the form of \_\_\_\_\_.
- (vi) The microorganisms which breakdown dead plants & animals into humus are called \_\_\_\_\_.
- (vii) The dark coloured substance formed by the action of microorganisms is called \_\_\_\_\_.

Q2. Match the following:

- |                     |                              |
|---------------------|------------------------------|
| (a) Forests         | (i) Oxygen                   |
| (b) Humus           | (ii) Prevent soil erosion    |
| (c) Decaying matter | (iii) Food & habitat         |
| (d) Photosynthesis  | (iv) Dark coloured substance |
| (e) Roots           | (v) Moist & warm             |

Q3. Give two examples of (i) Decomposers (ii) Scavengers

Q4. Choose the correct option:

- (i) In forest, trees with crowns of different types & sizes create different horizontal layers called as
  - (a) Canopy
  - (b) Crown
  - (c) Roofcover
  - (d) Understorey
- (ii) The branchy part of a tree above the stem is called:
  - (a) Roof top
  - (b) Crown
  - (c) Canopy
  - (d) None of these
- (iii) The roof like structure formed by the branches of tall trees over other plants in forest is called
  - (a) Roofcover
  - (b) Crown
  - (c) Understorey
  - (d) Canopy

(iv) The food chain begins with

(a) Grasshopper

(c) Grass

(b) Snake

(d) Frog

Q5. Complete the food chain:

\_\_\_\_\_ → insect → \_\_\_\_\_ → snake → \_\_\_\_\_

~~~~~  
**QUESTION BANK**

Q1. Define the following :

(i) Crown                      (ii) Canopy                      (iii) Understorey

(Hint. Module 15, 16 Q. 4 of Assignment booklet)

Q2. What are decomposers? Give examples. Also mention their role in forest. (Hint. Pg-212 of NCERT)

Q3. What do you mean by the following :

(i) Humus                      (ii) Food Chain                      (iii) Scavengers

(Hint. Pg-211, 212 of NCERT)

Q4. (i) Why are forests called green lungs?

Or

Explain the role of forest in maintaining the balance between oxygen and carbon di oxide in the atmosphere.

(ii) Why are forest called water purifying system in nature/ maintain water cycle  
(Hint. pg-212, NCERT 2<sup>nd</sup> colm. 2<sup>nd</sup> para)

Q5. Give reason how forests

(i) Prevent flood/ maintain water table (Hint. Pg-214, the rain drops..... + 2 pg- 215, 3rd para)

(ii) Prevent soil erosion (Hint. Pg-215, 3<sup>rd</sup> para- Roots of trees....)

(iii) Prevent global warming (Hint. CO<sub>2</sub> is a greenhouse gas which absorbs heat rays)

Q6. Why there is no waste in the forest? (Hint. – role of decomposers and scavengers)

Q7. How do animals living in forest help it grow and regenerate? (Hint. – role of animals in pollination, seed dispersal, decomposition of their dead bodies to add nutrients etc.)

Q8. Explain why there is a need of variety of animals and plants in a forest? (Hint. Pg-213 NCERT)

Q9. What would happen if the forests disappear? (Hint. pg-216 NCERT, 4 points)