

INTERNATIONAL INDIAN SCHOOL DAMMAM

CLASS: X

QUESTIONS COMPILED FROM PREVIOUS YEARS' BOARD PAPERS

SCIENCE

PHYSICS

SELECT AND WRITE ONE MOST APPROPRIATE OPTION OUT OF THE FOUR OPTIONS GIVEN FOR EACH OF THE QUESTIONS

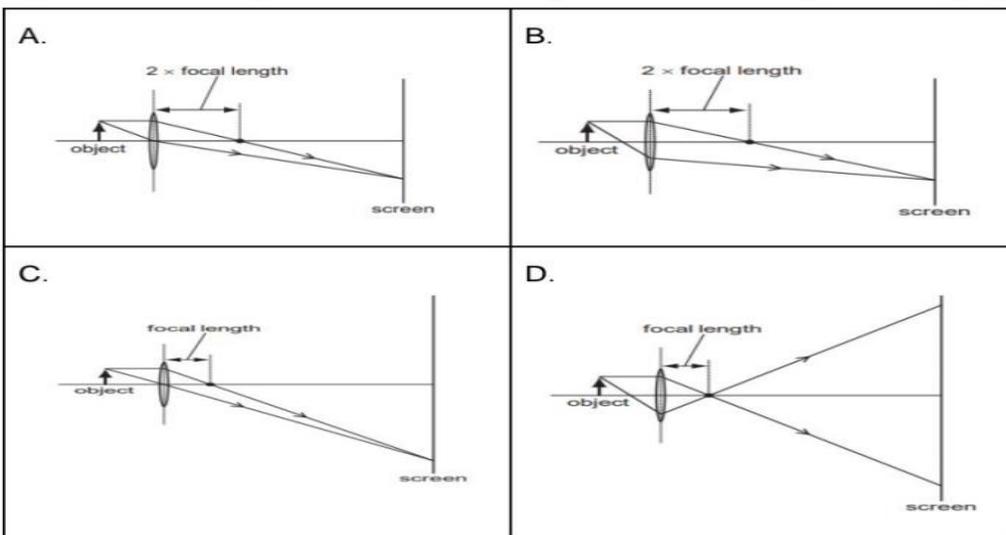
1. A student determines the focal length of a device 'X' by focusing the image of a distant object on a screen placed 20 cm from the device on the same side as the object. The device 'X' is

- (a) Concave lens of focal length 10 cm
- (b) Convex lens of focal length 20 cm
- (c) Concave mirror of focal length 10 cm
- (d) Concave mirror of focal length 20 cm

2. Which of the following mirrors is used by a dentist to examine a small cavity?

- (a) Convex mirror
- (b) Plane mirror
- (c) Concave mirror
- (d) Any spherical mirror

3. Which diagram shows image formation of an object on a screen by a converging lens?



4. Which of the following can make a parallel beam of light when light from a point source is incident on it?

- (a) Concave mirror as well as convex lens
- (b) Convex mirror as well as concave lens
- (c) Two plane mirrors placed at 90° to each other

(d) Concave mirror as well as concave lens

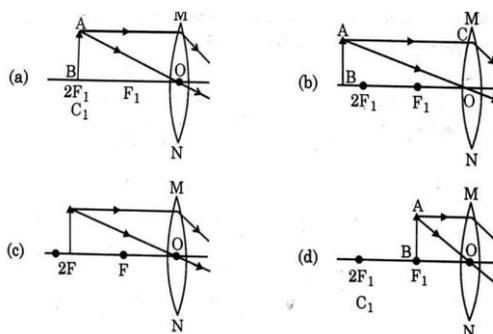
5. Consider these indices of refraction: glass: 1.52; air: 1.0003; water: 1.333. Based on the refractive indices of three materials, arrange the speed of light through them in decreasing order.

- (a) The speed of light in water > the speed of light in air > the speed of light in glass.
- (b) The speed of light in glass > the speed of light in water > the speed of light in air.
- (c) The speed of light in air > the speed of light in water > the speed of light in glass.
- (d) The speed of light in glass > the speed of light in air > the speed of light in water.

6. A ray of light starting from air passes through medium A of refractive index 1.50, enters medium B of refractive index 1.33 and finally enters medium C of refractive index 2.42. If this ray emerges out in air from C, then for which of the following pairs of media the bending of light least?

- (a) Air-A
- (b) A-B
- (c) B-C
- (d) C-air

7. A student wants to obtain magnified image of an object AB as on a Screen. Which one of the following arrangements shows the correct position of AB for him/her to be successful?

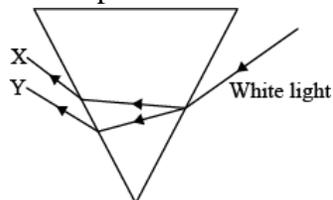


8. which of the following statements is not true for scattering of light?

- (a) Colour of the scattered light depends on the size of particles of the atmosphere.
- (b) Red light is least scattered in the atmosphere.
- (c) Scattering of light takes place as various colours of white light travel with different speed in air.
- (d) The fine particles in the atmospheric air scatter the blue, light more strongly than red. So the scattered blue light enters our eyes.

9. In the diagram given below X and Y are the end colours of the spectrum of white light. The colour of

'Y' Represents the

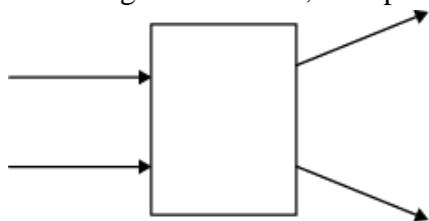


- (a) Colour of sky as seen from earth during the day.
- (b) Colour of the sky as seen from the moon.

(c) Colour used to paint the danger signals.

(d) Colour of sun at the time of noon.

10. The following diagram shows the use of an optical device to perform an experiment of light. As per the arrangement shown, the optical device is likely to be a;



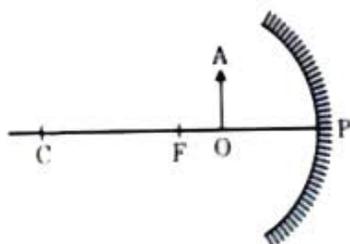
(a) Concave mirror

(b) Convex mirror

(c) Concave lens

(d) Convex lens

11. For the diagram shown according to the new Cartesian sign convention the magnification of the image formed will have the following specifications:



(a) Sign -Positive, Value -Less than 1

(b) Sign- Positive, Value -More than 1

(c) Sign -Negative, Value - Less than 1

(d) Sign -Negative, Value - More than 1

12. In which of the following is a concave mirror used?

(a) A solar cooker

(b) A rear view mirror in vehicles

(c) A safety mirror in shopping malls

(d) In viewing full size image of distant tall buildings.

13. The radius of curvature of a converging mirror is 30 cm. At what distance from the mirror should an object be placed so as to obtain a virtual image?

(a) Infinity

(b) 30 cm

(c) Between 15 cm and 30 cm

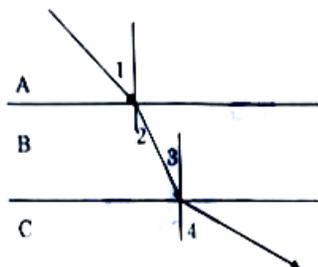
(d) Between 0 cm and 15 cm

14. If a lens can converge the sun rays at a point 20 cm away from its optical centre, the power of this lens is –

(a) + 2D

- (b) - 2D
- (c) + 5D
- (d) - 5D

15. A ray of light is incident as shown. If A, B and C are three different transparent media. then which among the following options is true for the given Diagram?



- (a) $\angle 1 > \angle 4$
- (b) $\angle 1 < \angle 2$
- (c) $\angle 3 = \angle 2$
- (d) $\angle 3 > \angle 4$

16. The deflection of light by minute particles and molecules of the atmosphere in all directions is called _____ of light.

- (a) dispersion
- (b) scattering
- (c) interference
- (d) Tyndall effect

17. A person cannot see distinctly objects kept beyond 2m. This defect can be corrected by using lens of power

- (a) + 0.5 D
- (b) - 0.5 D
- (c) + 0.2 D
- (d) - 0.2 D

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

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

18. **Assertion(A):** White light is dispersed into its seven-colour components by a prism.

Reason (R): Different colours of light bend through different angles with respect to the incident ray as they pass through a prism.

19. **Assertion(A):** Hypermetropia is the defect of the eye in which only farther objects are seen.

Reason (R) : Hypermetropia is corrected by using diverging lens.

20. **Assertion (A)** : Blue colour of sky appears due to scattering of blue colour.

Reason (R) : Blue light has longer wavelength.

21. **Assertion(A)** : Light travels faster in glass than in air.

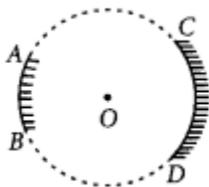
Reason (R) : Glass is denser than air.

22. **Assertion(A)** : Concave mirrors are used as make-up mirrors.

Reason (R) : When the face is held within the focus of a concave mirror, then a diminished image of the face is seen in the concave mirror.

VERY SHORT ANSWER QUESTIONS

1. If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a labelled ray diagram to support your answer.
2. An object is placed at a distance of 50cm from a convex mirror. State two
3. characteristics of the image formed.
4. “The magnification produced by a spherical mirror is -3 ”. List four information’s you obtain from this statement about the mirror/image.
5. AB and CD, two spherical mirrors, from parts of a hollow spherical ball with its center at O as shown in the diagram. If arc AB = $1/2$ arc CD, what is the ratio of their focal lengths? State which of the two mirrors will always form virtual image of an object placed in front of it and why?



6. Search mirrors are mirrors that are used to look for hidden objects underneath the cars as shown. The hidden objects can be easily spotted as the mirror provides a wider field of view.



(a) What type of mirrors are generally used to make search mirrors? (b) With the help of a ray diagram describe the nature of image formed by the type of mirror identified in (a).

5. One student uses a lens of focal length $+50$ cm, and another of -50 cm. State the nature and find the power of each lens. Which of the two lenses will always give a virtual and diminished image irrespective of the position of the object?

6. Which colour of light bends least and which one the most while passing out from the prism? Also state the reason for the same.

7. To an astronaut in space, the sky appears black instead of blue at night? What is the cause for that state?

8. What is presbyopia? Write two causes of this defect.

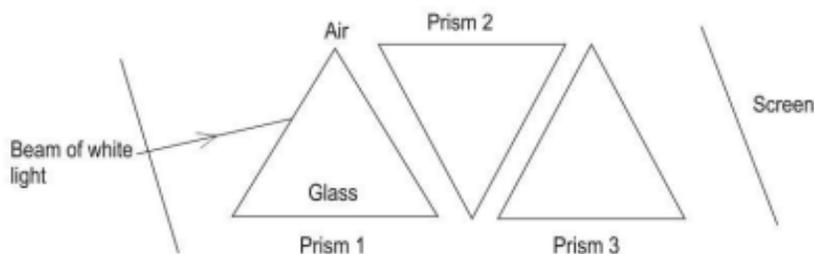
9. What do you understand by power of accommodation?

SHORT ANSWER QUESTIONS

1. Absolute refractive indices of two media P and Q are 1.33 (n_P) and 2.52 (n_Q) respectively. The speed of light in medium P is 2×10^8 m/s. (a) What would be the speed of light in medium Q (v_Q)? (b) If the angle of incidence for a ray of light travelling from medium P to Q is 0° , then what will be the path of light in the medium Q?
2. What is understood as lateral displacement of light? Illustrate this with the help of a diagram. List two factors on which the lateral displacement in a particular substance depends.
3. The image of a candle flame placed at a distance of 30 cm, from a spherical lens is formed on a screen placed on the other side of the lens at a distance of 60cm from the optical centre of the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 3 cm. find the height of the image.
4. What is atmospheric refraction? Use this phenomenon to explain the following natural events.
 - (a) Twinkling of stars
 - (b) Advanced sun-rise and delayed sun-set.
5. Suita's ophthalmologist suggests her to use a lens of power -2 D to correct her vision.
 - i. What type of lens should she use?
 - ii. What should be the focal length of the lens?
 - iii. An object is kept at 10 cm in front of the lens of power -2 D. Find the distance where the image is produced.

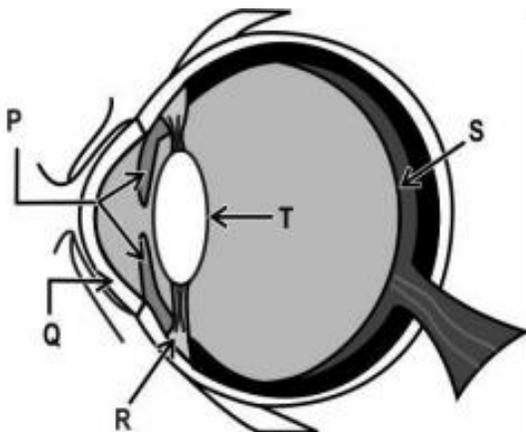
LONG ANSWER QUESTIONS

1. Savera passed a beam of white light through a series of equilateral prisms as shown



- (a) What colour(s) will be seen on the screen?
 - (b) Copy the diagram above and draw the beam entering Prism 1 and emerging from Prism 3 and falling on the screen.
 - (c) Name all the processes that takes place when the beam of light enters the Prism 1 and emerges from Prism 3.
2. (a) Rupal suffers from myopia. Where would the image form in her eye?
 - (b) Name the type of lens that is generally used to correct myopia.
 - (c) Rupal underwent cataract surgery and her eye lens was replaced with an artificial lens with a fixed focal length, made of a plastic material, silicone. State one likely visual disadvantage that Rupal is likely to experience as compared to a person who has normal eyesight.
 - (d) The far point of a myopic person is 80 cm in front of the eye. What is the nature and power of the lens required to correct the problem?

(e) Identify the parts of the eye labeled in the diagram from the descriptions given below by writing the labels as your answer.



- (i) It helps in changing the focal length of the lens.
 - (ii) It causes most of the refraction of the light entering the eye.
 - (iii) It controls the amount of light entering the eye.
 - (iv) It acts as a screen on which the image is formed.
3. “Rainbow is an example of dispersion of sunlight”. Justify this statement by explaining, with the help of a labelled diagram, the formation of a rainbow in the sky. List two essential conditions for observing a rainbow.

CASE - BASED/DATA -BASED QUESTION

1. We know that lenses form different types of images when objects are kept at varying positions. When a ray is incident parallel to the principal axis, then after refraction, it passes through the focus or appears to come from the focus. When a ray goes through the optical centre of the lens, it passes without any deviation. If the objects placed between the focus and optical center of the convex lens, erect and magnified image is formed. As the object is brought closer to the convex lens from infinity to focus, the image moves away from the convex lens from focus to infinity. Also the size of the image goes on increasing and the image is always real and inverted. A concave lens always gives a virtual, erect and diminished image irrespective of the position of the object.
2.
 - i. The location of image formed by a convex lens when the object is placed at infinity is**
 - (a) at focus
 - (b) at $2F$
 - (c) at optical center
 - (d) between F and $2F$
 - ii. When the object is placed at the focus of concave lens, the image formed is**
 - (a) real and smaller
 - (b) virtual and smaller
 - (c) virtual and inverted
 - (d) real and erect

iii. The size of image formed by a convex lens when the object is placed at the focus of convex lens is

- (a) highly magnified
- (b) point in size
- (c) small
- (d) same as that of object

iv. When the object is placed at 2F in front of convex lens, the location of image is

- (a) at F
- (b) between F and optical center
- (c) at infinity
- (d) none of the above

BIOLOGY

MULTIPLE CHOICE QUESTIONS:

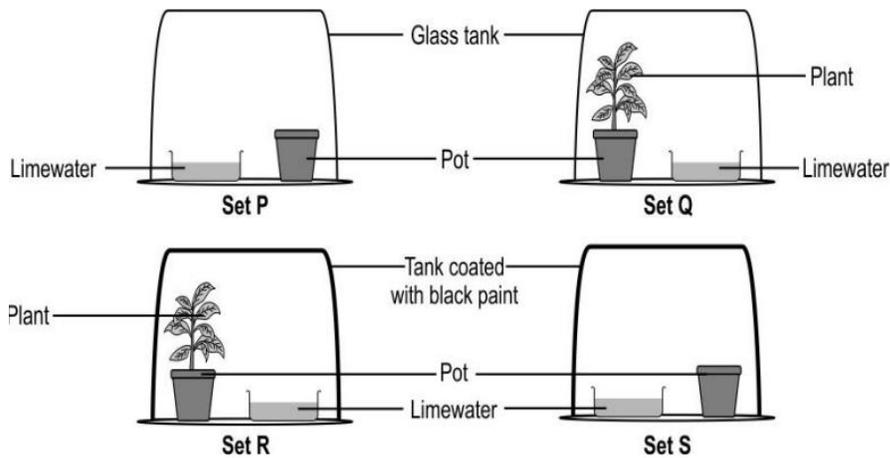
1. Consider the following statements about small intestine and select the one which is NOT correct:
 - (a) The length of the small intestine in animals differs as it depends on the type of food they eat.
 - (b) The small intestine is the site of complete digestion of food.
 - (c) The small intestine receives secretions from liver and pancreas.
 - (d) The villi of the small intestine absorb water from the unabsorbed food before it gets removed from the body via the anus.

2. An organism which breaks down the food material outside the body and then absorbs it is
 - (a) a plant parasite, Cuscuta
 - (b) an animal parasite, Tapeworm
 - (c) a bacteria, Rhizobium
 - (d) a fungi, Rhizopus

3. The function of the lining of mucus in the nasal passage of human being is to:
 - (a) increase the temperature of inhaled air.
 - (b) move the air in and out.
 - (c) filter the air we breathe in.
 - (d) absorb oxygen from air.

4. Lime water turns cloudy in the presence of a gas which is a by-product of respiration.

Shown below are four setups kept in sunlight for 24 hours.



In which setup is lime water expected to be the cloudiest?

- (a) Setup P
- (b) Setup Q
- (c) Setup R
- (d) Setup S

5. Which of the following statement (s) is (are) true about heart?

- (i) Left atrium receives oxygenated blood from different parts of body while right atrium receives deoxygenated blood from lungs
- (ii) Left ventricle pumps oxygenated blood to different body parts while right ventricle pumps deoxygenated blood to lungs.
- (iii) Left atrium transfers oxygenated blood to right ventricle which sends it to different body parts.
- (iv) Right atrium receives deoxygenated blood from different parts of the body while left ventricle pumps oxygenated blood to different parts of the body.

- (a) (i)
- (b) (ii)
- (c) (ii) and (iv)
- (d) (i) and (iii)

6. In which of the following vertebrate group/groups, heart does not pump oxygenated blood to different parts of the body?

- (a) Pisces and amphibians
- (b) Amphibians and reptiles
- (c) Amphibians only
- (d) Pisces only

7. Choose the correct path of urine in our body

- (a) kidney → ureter → urethra → urinary bladder
- (b) kidney → urinary bladder → urethra → ureter
- (c) kidney → ureters → urinary bladder → urethra
- (d) urinary bladder → kidney → ureter → urethra

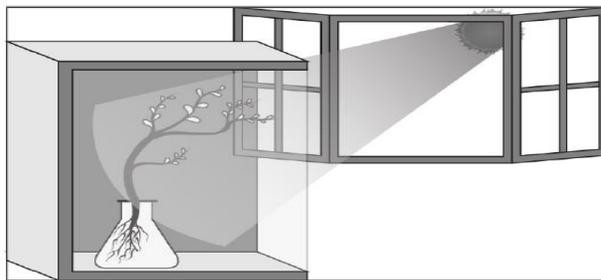
8. The filtration units of kidneys are called:

- (a) ureter
- (b) urethra
- (c) neurons
- (d) nephrons

9. What prevents backflow of blood inside the heart during contraction?

- (a) Valves in heart
- (b) Thick muscular walls of ventricles
- (c) Thin walls of atria
- (d) All of the above

10. Raghav potted some germinated seeds in a pot. He put the pot in a cardboard box that was opened from one side. He keeps the box in a way that the open side of the box faces sunlight near his window. After 2-3 days, he observes the shoot bends towards the light, as shown in the image.



Which type of tropism does he observe?

- (a) Geotropism
- (b) Phototropism
- (c) Chemotropism
- (d) Hydrotropism

11. In a synapse, chemical signal is transmitted from:
- a) Dendritic end of one neuron to axonal end of another neuron.
 - b) Axon to cell body of the same neuron.
 - c) Cell body to axonal end of the same neuron.
 - d) Axonal end of one neuron to dendritic end of another neuron.
12. In spirogyra asexual reproduction takes place by
- a) Breaking up of the filaments into smaller bits
 - b) Division of a cell into two cells
 - c) Binary fission
 - d) Multiple fission
13. Vegetative propagation refers to formation of new plants from
- e. Stem, root and flowers
 - f. Stem, roots, leaves
 - g. Stem, flowers, fruits
 - h. Stem, leaves, flowers
14. A feature of reproduction that is common to Amoeba, Spirogyra and Yeast is that
- (a) they reproduce asexually
 - (b) they are all unicellular
 - (c) they reproduce only sexually
 - (d) they are all multicellular
15. In Rhizopus fungus, the fine thread-like structures spread on the whole structure of slice of bread are called
- a) Rhizoids
 - b) Stems
 - c) Roots
 - d) Hyphae
16. An algae which reproduces by the asexual reproduction is
- a) Rhizopus
 - b) Salmonella
 - c) Plasmodium
 - d) Spirogyra
17. The part of Bryophyllum where the buds are produced for vegetative propagation.

- a) Leaf
- b) Stem
- c) Root
- d) Branch

ASSERTION REASONING QUESTIONS:

- a) Both A and R are true and R is correct explanation of A.
 - b) Both A and R are true but R is not the correct explanation of A.
 - c) A is true and R is false.
 - d) A is false but R is true.
18. Assertion: Raw materials needed for photosynthesis are carbon dioxide, water and minerals.
Reason: Nutrients provide energy to an organism.
19. Assertion: Lungs always contain a residual volume of air.
Reason: It provides sufficient time for oxygen to be absorbed and for carbon dioxide to be released.
20. Assertion: Transpiration is a necessary evil.
Reason: It causes water loss but helps in absorption and upward movement of water and minerals
21. Assertion: Translocation of sugar occurs through the phloem.
Reason: It is achieved by the diffusion of sugars through phloem.
22. Assertion: Excretion is the biological process by which harmful wastes are removed from an organism's body.
Reason: The mode of excretion is completely same in both unicellular and multicellular organisms.
23. Assertion (A): Failure of secretion of growth hormone from an early age causes dwarfism in the patient.
Reason (R): Growth hormone stimulates the body growth and elongation of long bones
24. Assertion (A) - A person has lost most of his/her intelligence, memory and judgement.
Reason(R) - The person has undergone an operation of a tumour located in the cerebrum.
25. Assertion: Cytokines are in highest concentration in fruits and seeds.
Reason: Cytokines are responsible for promoting cell division.
26. Assertion: In asexual reproduction, only one parent is required to produce a new organism.
Reason: Regeneration is a type of asexual reproduction.
27. Assertion: When a bacterium divides into two, and the resultant two bacteria divide again, the four bacteria produced would be almost similar.

Reason: DNA copying involves small inaccuracies in the reproduction process.

SHORT ANSWER QUESTIONS:

1. Give one feature common to each of the following:

- a) Glycogen and Starch
- b) Chlorophyll and Haemoglobin
- c) Gills and Lungs
- d) Arteries and veins

2. How would the digestion of food be affected if the bile duct of a human is completely blocked? Explain.

3. Why there is a difference in the rate of breathing between aquatic organisms and terrestrial organisms? Explain.

4. Write two different ways in which glucose is oxidised to provide energy in human body. Write the products formed in each case

5. Differentiate between an artery and a vein.

6. What will happen if

- a) Xylem tissue in a plant is removed?
- b) We are injured and start bleeding.

7. a) What is meant by excretion?

- b) Name the organ that connects the kidneys with the urinary bladder. State its function.
- c) List two factors on which the amount of water reabsorbed depends.

8. a) What is translocation? Why is it essential for plants?

- b) Where do substances in plants reach as a result of translocation?

9. What is insulin? Why are some patients of diabetes treated by giving? Injections of insulin?

10. How is the movement of leaves of the sensitive plants different from the Movement of a shoot towards light?

11. Name the part of human brain which controls (i) voluntary actions, and (ii) involuntary actions.

12. Write the function of peripheral nervous system. Name the components of this system stating their origin

13. A student observed a permanent slide showing asexual reproduction in Hydra. Draw labelled diagram in proper sequence of the observations that must have been made by the student. Name the process of reproduction also.
14. (a) Differentiate between binary fission in Amoeba and binary fission in leishmania.
(b) How does reproduction take place in malarial parasite?
15. (a) Name the reproductive and non-reproductive parts of bread mould (Rhizopus).
(b) List two advantages of vegetative propagation.
16. List two plants which reproduce by vegetative propagation.

LONG ANSWER QUESTIONS:

1. Bile juice does not have any digestive enzyme but still plays a significant role in the process of digestion. Justify the statement.
2. Describe the process of breathing in human being.
3. Describe the flow of blood through the heart of human beings.
4. Describe the process of urine formation in kidneys.
5. (a) Why is the use of iodized salt advisable? Name the disease caused due to deficiency of iodine in our diet and state its one symptom.
(b) How do nerve impulses travel in the body? Explain.
6. What is hydrotropism? Design an experiment to demonstrate this Phenomenon.
What are plant hormones? Name the plant hormones responsible for the following:
 - a) Growth of stem.
 - b) Promotion of cell division.
 - c) Inhibition of growth.
 - d) Elongation of cells.
7. Name the hormone released and the gland which excretes it in human beings during scary situations. How does the body respond to enable it to deal with the situation.
8. List three points of difference between nervous and hormonal mechanisms for control and coordination in animals.
9. How are auxins related with the bending of plant shoot towards unidirectional light? Explain.
10. Name the disorder which a person is likely to suffer from due to the following:
 - (a) Over secretion of growth hormone
 - (b) Deficiency of oestrogen in females
 - (c) Less secretion of thyroxine
 Also name the gland that secretes each of the hormones mentioned above.
11. How the timing and amount of hormone released is regulated? Explain with the help of an example.
12. What happens when:

- (a) Accidentally, Planaria gets cut into many pieces?
 - (b) Bryophyllum leaf falls on the wet soil?
 - (c) On maturation, sporangia of Rhizopus bursts?
13. (a) Draw in sequence, the process of binary fission in Amoeba.
 (b) How does binary fission differ from multiple fission? Give two differences.
14. (a) Differentiate between natural and artificial vegetative propagation in plants.
 (b) State the process of grafting.
15. (a) Define vegetative propagation. List its two methods.
 (b) Why is this mode practiced for growing some types of plants?
 (c) Explain the process of budding in Hydra with the help of labelled diagrams.
16. (a) Draw a diagram to show spore formation in Rhizopus.
 (b) With the help of an example differentiate between the process of budding and fragmentation.
 (c) Why is vegetative propagation practiced for growing some type of plants?

CASE STUDY

1. The heart is a muscular organ which is as big as our fist. Because both oxygen and carbon dioxide have to be transported by the blood, the heart has different chambers to prevent the oxygen-rich blood from mixing with the blood containing carbon dioxide. The carbon dioxide-rich blood has to reach the lungs for the carbon dioxide to be removed, and the oxygenated blood from the lungs has to be brought back to the heart. This oxygen-rich blood is then pumped to the rest of the body.

- a) How many chambers are present in the heart of mammals and reptiles?
- b) Who carry deoxygenated blood from body to heart?
- c) What do you mean by the term double circulation?
- d) What is hypertension?
- e) Which device measured blood pressure?

2. The excretory system of human beings includes a pair of kidneys, a pair of ureters, a urinary bladder and a urethra. Kidneys are located in the abdomen, one on either side of the backbone. Urine produced in the kidneys passes through the ureters into the urinary bladder where it is stored until it is released through the urethra.

- a) What is the purpose of making urine?
- b) What is Bowman's capsule?
- c) What is dialysis?

d) What is the function of urinary bladder?

e) What are the different parts of nephrons?

3. Plant transport systems will move energy stores from leaves and raw materials from roots. These two pathways are constructed as independently organised conducting tubes. One, the xylem moves water and minerals obtained from the soil. The other, phloem transports products of photosynthesis from the leaves where they are synthesised to other parts of the plant

a) What are the different parts of xylem?

b) What do you mean by the term transpiration?

c) What are the advantages of transpiration?

d) What is translocation?

e) How does plant remove their waste product?

4. Smitha's father was complaining about frequent urination, pain in leg and weight loss to Smitha's mother and she discussed with her daughter Smitha when she returned from school.

After discussing they decided to advise her father to consult a doctor immediately. The doctor diagnosed that Smitha's father was having elevated level of blood glucose. He should take care of his diet and should exercise regularly to maintain his normal glucose level.

On the basis of the text, answer the following questions:

a) Name the disease he is suffering from and name the hormone whose deficiency causes it.

b) Identify the gland that secretes and mention the function of this hormone.

c) Explain how the time and amount of secretion of this hormone is regulated in human system.

5. All the reproductive methods of living organisms are broadly categorized

Into two types: 1. Asexual reproduction, and 2. Sexual reproduction.

Asexual reproduction involves the participation of a single parent without the formation of gametes, fertilization and transfer of genetic material. This method is a common means of rapidly increasing offsprings under favourable conditions.

(a) Name the type of fission that occurs in Leishmania and Plasmodium.

(b) Write one advantage of sexual mode of reproduction over asexual reproduction.

(c) Give reasons why:

(i) Colonies of yeast fail to multiply in water but multiply in sugar solution.

(ii) Rhizopus individuals do not grow on a dry slice of bread.

OR

Name the filamentous structures a student could identify when he collected water from a pond that appeared dark green. How do these organisms multiply? Explain.

CHEMISTRY

SECTION A (1m)

1. On placing a copper coin in a test tube containing green ferrous sulphate solution, it will be observed that the ferrous sulphate solution

- (a) turns blue, and a grey substance is deposited on the copper coin.
- (b) turns colourless and a grey substance is deposited on the copper coin.
- (c) turns colourless and a reddish–brown substance is deposited on the copper coin.
- (d) remains green with no change in the copper coin.

2. In the redox reaction $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$

- (a) MnO_2 is reduced to MnCl_2 & HCl is oxidized to H_2O
- (b) MnO_2 is reduced to MnCl_2 & HCl is oxidized to Cl_2
- (c) MnO_2 is oxidized to MnCl_2 & HCl is reduced to Cl_2
- (d) MnO_2 is oxidized to MnCl_2 & HCl is reduced to H_2O

3. A student took Sodium Sulphate solution in a test tube and added Barium Chloride solution to it. He observed that an insoluble substance has formed. The colour and molecular formula of the insoluble substance is

- (a) Grey, Ba_2SO_4
- (b) Yellow, $\text{Ba}(\text{SO}_4)_2$,
- (c) White, BaSO_4
- (d) Pink, BaSO_4 .

4. In a double displacement reaction such as the reaction between sodium sulphate solution and barium chloride solution :

- (A) Exchange of atoms takes place
- (B) Exchange of ions takes place
- (C) A precipitate is produced
- (D) An insoluble salt is produced.

5. Which one of the following reactions is categorised as thermal decomposition reaction ?

- (a) $2\text{H}_2\text{O}(l) \rightarrow 2\text{H}_2(g) + \text{O}_2(g)$
- (b) $2\text{AgBr}(s) \rightarrow 2\text{Ag}(s) + \text{Br}_2(g)$
- (c) $2\text{AgCl}(s) \rightarrow 2\text{Ag}(s) + \text{Cl}_2(g)$
- (d) $\text{CaCO}_3(s) \rightarrow \text{CaO}(s) + \text{CO}_2(g)$

6. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is

- (a) 1:1
- (b) 2:1
- (c) 4:1
- (d) 1:2

7. When a small amount of acid is added to water, the phenomena which occur are

- (a) Dilution
- (b) Neutralization
- (c) Formation of H_3O^+ ions
- (d) Salt formation

The correct statements are:

- (A) (a) and (c)
- (B) (a) and (d)
- (C) (a) and (b)
- (D) (b) and (d)

- (B) (b) and (d) (D) (c) and (d)
8. Which of the following salts is having water of crystallization?
(A) Baking Soda
(B) Bleaching Powder
(C) Plaster of Paris
(D) Baking Powder
9. In an aqueous solution 'A', phenolphthalein solution colour is pink. On addition of an aqueous solution 'B' to 'A', the pink colour disappears. Which of the following statement is true for solution 'A' and 'B'
(A) A is strongly acidic and B is a weak base
(B) A is strongly acidic and B is weak acid
(C) A has pH greater than 7 and B has pH less than 7
(D) A has pH less than 7 and B has pH greater than 7
10. At what temperature is gypsum heated to form plaster of paris?
(A) 90°C
(B) 100°C
(C) 110°C
(D) 120°C
11. Rain is called acid rain when its pH
(A) falls below 6
(B) falls below 7
(C) falls below 5.6
(D) is above 7
12. Tooth enamel is made up of
(A) Calcium phosphate
(B) Calcium sulphate
(C) Magnesium sulphate
(D) Sodium phosphate
13. A solution reacts with crushed egg shells to give a gas that turns lime water milky. The solution contains
(A) NaCl
(B) HCl
(C) KCl
(D) CaCl_2
14. Which salt is formed when zinc reacts with sodium hydroxide?
(A) Zinc hydroxide
(B) Sodium zincate
(C) Zinc oxide
(D) Water
15. Brine is an
(A) Aqueous solution of sodium hydroxide
(B) Aqueous solution of sodium carbonate
(C) Aqueous solution of sodium bicarbonate
(D) Aqueous solution of sodium chloride

Assertion Reason Type Questions

- (A) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).
 (B) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).
 (C) Assertion (A) is true and Reason (R) is false.
 (D) Assertion (A) is false and Reason (R) is true.
1. ASSERTION: The aqueous solutions of glucose and alcohol do not show acidic character.
 REASON: Aqueous solutions of glucose and alcohol do not give H^+ ions.
 2. ASSERTION: HCl gas does not change the colour of dry blue litmus paper.
 REASON: HCl gas dissolves in the water present in wet litmus paper to form H^+ ions.
 3. ASSERTION: Silver bromide decomposition is used in black and white
 REASON: Light provides energy for this exothermic reaction.
 4. ASSERTION(A): Zinc reacts with sulphuric acid to form zinc sulphate and hydrogen gas.
 REASON(R) : Zinc is more reactive than hydrogen.
 5. ASSERTION: A lead nitrate on thermal decomposition gives lead oxide, brown coloured nitrogen dioxide and hydrogen gas.
 REASON: Lead nitrate reacts with potassium iodide to form yellow ppt of lead iodide and the reaction is double displacement as well as precipitation reaction.

SECTION B (2m)

1. What is neutralization reaction? Give one example
2. What do you mean by chlor-alkali process?
3. Tartaric acid is added to baking soda for making baking powder. Why?
4. Why should curd and sour substances not be kept in brass or copper vessels?
5. What are olfactory indicators? Give examples
6. A clear solution of slaked lime is made by dissolving $Ca(OH)_2$ in an excess of water. This solution is left exposed to air. The solution slowly goes milky as a faint white precipitate forms. Explain why a faint white precipitate forms, support your response with the help of a chemical equation.
7. i) What is observed when a solution of potassium iodide is added to a solution of lead nitrate?
 (ii) Name the type of reaction.
 (iii) Write a balanced chemical equation to represent the above chemical reaction.
8. **Identify the type of chemical reaction**
 (i) $A + B \rightarrow C$
 (ii) $A + BC \rightarrow AC + B$

SECTION C (3m)

1. Complete and balance the following chemical equation.
 (i) $NaOH + Zn \longrightarrow$
 (ii) $CaCO_3 + H_2O + CO_2 \longrightarrow$
 (iii) $HCl + H_2O \longrightarrow$
2. Identify the acid and the base from which sodium chloride is obtained. Which type of salt is it? When is it called rock salt? How is rock salt formed?

3. Identify the compound of calcium which is used for plastering of fractured bones. With the help of chemical equation show how is it prepared and what special precautions should be taken during the preparation of this compound.
4. 2 g of ferrous sulphate crystals are heated in a dry boiling tube.
- List any two observations.
 - Name the type of chemical reaction taking place.
 - Write the balance chemical equation for the reaction.
5. Decomposition reactions require energy either in the form of heat or light or electricity for breaking down the reactants. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light and electricity.
6. Study the following equation of a chemical reaction:

$$\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$$
- Identify the type of reaction.
 - Write a balanced chemical equation of another example of this type of reaction.
7. In the reaction $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$
- Name the substance oxidised.
 - Name the oxidising agent.
 - Name the reducing agent and the substance reduced.

SECTION D (5m)

1. Give suitable reasons for the following:
- Rain water conducts electricity but distilled water does not.
 - A tarnished copper vessel regains its shin when rubbed with lemon.
 - The crystals of washing soda change to white powder on exposure to air.
 - An aqueous solution of sodium chloride is neutral but an aqueous solution of sodium carbonate is basic.
 - During summer season, a milkman usually adds a very small amount of baking soda to fresh milk.
2. Answer the following questions:
- Why does an aqueous solution of acid conduct electricity?
 - How does the concentration of hydrogen ions (H_3O^+) changes when the solution of an acid is diluted with water?
 - Which has higher pH? A concentrated or dilute solution of HCl?
 - What would you observe on adding dilute HCl acid to:
 - Sodium bicarbonate placed in a test tube.
 - Zinc metal in a test tube.
3. You might have noted that when copper powder is heated in a China dish, the reddish brown surface of copper powder becomes coated with a black substance.
- Why has this black substance formed?
 - What is the black substance?
 - Write the chemical equation of the reaction that takes place.
 - How can the black coating on the surface be turned reddish brown?
4. Can a displacement reaction be a redox reaction? Explain with the help of an example.
- Write the type of chemical reaction in the following:

- (i) Reaction between an acid and a base
- (ii) Rusting of iron.

5. Write a balanced chemical equation for each following reaction and classify

- (a) Lead acetate solution is treated with dilute hydrochloric acid to form lead chloride and acetic acid solution.
- (b) A piece of sodium metal is added to absolute ethanol to form sodium ethoxide and hydrogen gas.
- (c) Iron (III) oxide on heating with carbon monoxide gas reacts to form solid iron and liberates carbon dioxide gas.
- (d) Hydrogen sulphide gas reacts with oxygen gas to form solid sulphur and liquid water.

SECTION E (4m)

Case Study

1. The reaction between carbon dioxide and calcium hydroxide (lime water), Calcium hydroxide, which is a base, reacts with carbon dioxide to produce a salt and water. Since this is similar to the reaction between a base and an acid, we can conclude that nonmetallic oxides are acidic in nature.

- (a) What is the nature of Carbon dioxide?
- (b) Give another reaction of non-metallic oxide and a base?
- (c) Arrange the following bases in increasing order of their reactivity: NaOH, Ca(OH)₂ & Mg(OH)₂
- (d) Write the complete reaction between calcium hydroxide and carbon dioxide with physical states
- (e) What is the nature of non-metallic oxide?

2. On heating gypsum at 373 K, it loses water molecules and becomes calcium sulphate hemihydrate (CaSO₄·½ H₂O). This is called Plaster of Paris. Plaster of Paris is a white powder and on mixing with water, it changes to gypsum once again giving a hard solid mass. Water of crystallization is the fixed number of water molecules present in one formula unit of a salt. Five water molecules are present in one formula unit of copper sulphate. Chemical formula for hydrated copper sulphate is CuSO₄·5H₂O.

- (a) What is the molecular formula of gypsum?
- (b) Write the equation of formation of plaster of Paris by heating gypsum?
- (c) What are the uses of Plaster of Paris?
- (d) Give the equation when POP is mixed with water.
- (e) What does this 2 denote in CaSO₄·2H₂O?

3. Corrosion is the phenomenon of deterioration of surface of metal in presence of air and moisture. It is a natural process and in the presence of a moist atmosphere, chemically active metals get corroded. This is an oxidation reaction. Rusting is the process where iron corrodes due to exposure to the atmosphere. The main circumstance of corrosion occurs with iron because it is a structural material in construction, bridges, buildings, rail transport, ships, etc. Aluminium is also an important structural metal, but even aluminium undergoes oxidation reactions. However, aluminium doesn't corrode or oxidize as rapidly as its reactivity suggests. Copper (Cu) corrodes and forms a basic green carbonate.

- (i) What is rusting?
- (ii) Which two metals do not corrode easily?
- (iii) Write the chemical name of the compound formed on corrosion of silver.
- (iv) Corrosion is
 - (a) a redox reaction
 - (b) a reduction reaction
 - (c) a displacement reaction
 - (d) an oxidation reaction