



DELHI PUBLIC SCHOOL, CHANDIGARH

Periodic Test II, Session 2024-25

Class-X SCIENCE (Set 1)

TIME: 3 Hrs

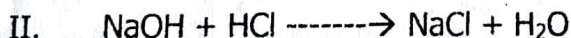
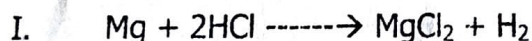
Maximum Marks: 80

General Instructions:

- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. Consider the following chemical equations I and II



The correct statements about these equations is:

- I is a displacement and II is decomposition
- I is a displacement and II is double displacement
- Both I and II are displacement reactions
- Both I and II are double displacement reactions.

2. Select the correct matching in the following table in connection with the given chemical equation:



	Initial colour of the solution	Final colour of the solution	Final colour of iron nail	Type of reaction
(a)	Pale green	Blue	Grey	Displacement
(b)	Blue	Pale green	Brownish	Double Displacement
(c)	Blue	Light Blue	Grey	Double Displacement
(d)	Blue	Pale green	Brownish	Displacement

3. A few drops of turmeric solution are added to a liquid. If the liquid becomes red, the liquid may be:

- (i) Distilled water
 - (ii) Ammonium hydroxide
 - (iii) Sodium Hydrogen carbonate solution
 - (iv) Hydrochloric acid
- (a) i and ii ~~(b)~~ ii and iii
(c) i and iii (d) iii and iv

4. Three test tubes A, B and C contain distilled water, an acidic solution and a basic solution respectively. When red litmus is used to test these solutions the observed colour changes respectively will be:

- (a) A- No change, B- Becomes dark red, C- becomes blue
- (b) A- becomes light red, B- becomes-blue, C- becomes red
- (c) A- becomes red, B- No change, C- becomes blue
- (d) A- becomes light red, B- becomes dark red, C- becomes blue

5. The acid present in tomatoes is:

- (a) Methanoic acid (b) Lactic acid
- (c) Acetic acid ~~(d)~~ Oxalic acid

6. The table below shows the reaction of a few elements with acids and bases to evolve hydrogen gas:

Element	Acid	Base
(A)	x	x
(B)	✓	✓
(C)	✓	x
(D)	✓	✓

Which of these form amphoteric oxides?

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

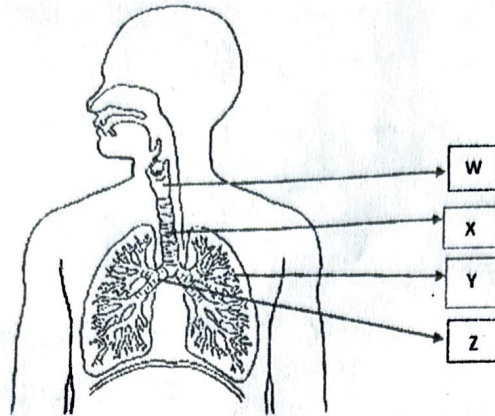
7. Which of the following is a non-metal and also a liquid?

- (a) Carbon (b) Chlorine (c) Iodine ~~(d)~~ Bromine

8. Which of the following statement about the autotrophs is **incorrect**? They

- a) synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll.
- b) store carbohydrates in the form of starch.
- ~~c)~~ convert carbon dioxide and water into carbohydrates in the absence of sunlight.
- d) contain chlorophyll that traps the sunlight and hence helps in photosynthesis.

9. The diagram shows part of the human gas exchange system.



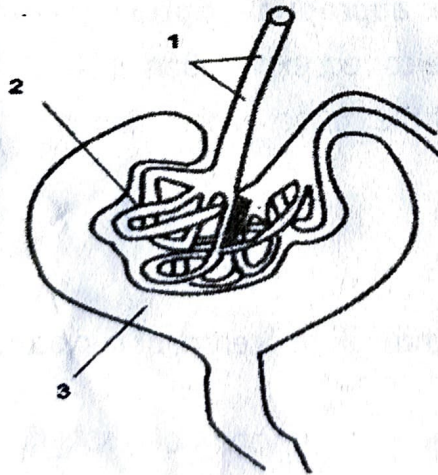
What is W, X, Y and Z?

	Bronchus	Bronchiole	Larynx	Trachea
(a)	W	X	Z	Y
(b)	X	Z	Y	W
(c)	Y	W	X	Z
(d)	Z	Y	W	X

10. The blood leaving the tissues become richer in

- a) carbon dioxide b) water
c) haemoglobin d) oxygen

11. Study the diagram given below and name the part known as Bowman capsule



- a) 1 ~~b) 2~~
c) 3 d) 2 and 3

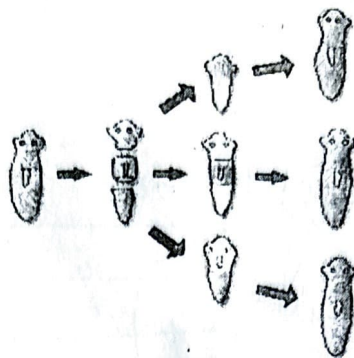
12. The plant hormone that effects wilting of leaves is

- a) auxin b) abscisic acid
c) cytokinin d) gibberellin

13. The part in which gustatory receptors are present in our body is

- a) ear b) tongue
c) nose d) skin

14. Identify the mode of asexual reproduction in the given diagram



- a) Binary fission
 b) Regeneration
 c) Fragmentation
 d) Budding

15. When an object is placed at a position X in front of a concave mirror an enlarged and virtual image is formed. Which among the following identifies X correctly

- a) Anywhere between centre of curvature and principal focus
 b) Anywhere between pole and principal focus
 c) Exactly at the centre of curvature
 d) Exactly at principal focus

16. When light enters the atmosphere, it strikes extremely fine particles which deflect the rays of light in all possible directions. This is due to

- a) reflection of light
 b) atmospheric refraction
 c) scattering of light
 d) dispersion of light

Assertion and Reason Questions

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.
 (e) Both A and R are false. (a)

17. **Assertion:** A ray of light passing through the centre of curvature of a spherical mirror retraces its path after reflection.

Reason: A ray passing through centre of curvature of a spherical mirror is incident normally on the surface.

18. **Assertion:** Fresh milk to which baking soda has been added, takes a longer time to set as curd (c)

Reason: Baking soda decreases the pH of fresh milk to below 6.

19. **Assertion:** In human beings, the respiratory pigment is haemoglobin (a)
Reason: Haemoglobin has high affinity for oxygen.

20. **Assertion:** Insulin maintains blood sugar level. (c)

Reason: Liver secretes insulin which helps to regulate blood sugar levels in the body.

Section B

21. Why is transpiration important for plants? *water*
 22. List two ways in which plants eliminate their waste products.

OR

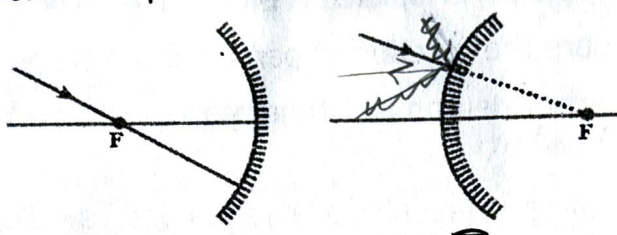
What is residual volume of air and why is it present in the lungs? ✓

23. Write one difference between binary fission in *Amoeba* and *Leishmania*. *1/1.5*

24. A person needs a lens of power -0.5D for correction of his vision

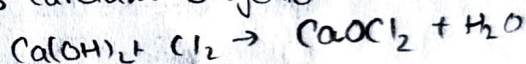
- a) What is the possible defect? *Myopia*
 b) What is the focal length of corrective lens? $\frac{1}{-0.5} = -\frac{1}{0.5} = \frac{10}{5} = -2 \text{ m}$

25. Draw the following diagram, in which a ray of light is incident on a concave/convex mirror, on your answer sheet. Show the part of this ray, after reflection, in each case.



26. A gas 'A' reacts with dry slaked lime and forms a compound 'B' which is used to make drinking water free from germs. Identify 'A' and 'B'. Give the chemical reaction for formation of compound 'B' from 'A'. *Chlorine, Calcium hypochlorite*

Section C



27. During electrolysis of water:

- (a) Name the gas collected at the cathode and the anode. *H₂, O₂*
 (b) Why is the volume of gas collected at one electrode double of the other? *2:1*
 (c) Why are a few drops of sulphuric acid added to water before electrolysis? *concentric acid of H⁺ ions*

28. Some magnesium ribbon and sulphur powder are burnt in air and the products formed are dissolved in water separately.

- (a) Write the equations for both reactions (burning in air and dissolving the product in water)
 (b) What will be the result when both solutions are tested with red and blue litmus papers? *1.5*

OR

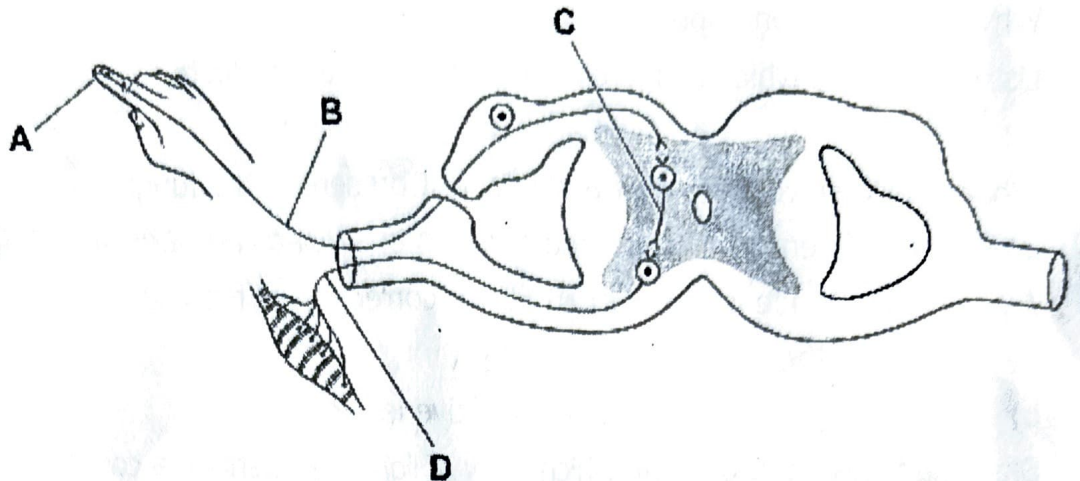
- (a) Why is sodium kept immersed in kerosene oil? *highly reactive*
 (b) A cable manufacturing company tested a few elements on basis of their physical properties.

Property	W	X	Y	Z
Malleable	Yes	No	No	Yes
Ductile	Yes	No	No	Yes
Electrical Conductivity	Yes	Yes	Yes	No
Melting Point	High	Low	Low	High

Which of the above were discarded for usage by the company?

- (c) Name two metals whose density is less than that of water.

29. a) In the given diagram:



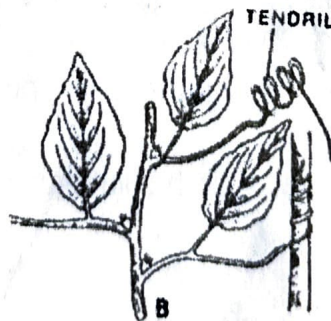
- i) Name the parts labelled A and C. *Receptor, Relay neuron*
 - ii) Compare the function of parts labelled B and D. *Sensory Motor*
- b) Name the part of neuron which helps to conduct a nerve impulse towards the cell body. *dendrite*

30. a) The neck of a person appears to be swollen due to deficiency of hormone. It is due to the gland located in the neck which is a small butterfly shape endocrine gland. Name the

- i) disease this person suffering from. *Goitre*
- ii) mineral whose deficiency in the diet causes this disease. *Iodine*
- iii) hormone that requires the above mineral for its synthesis. *Thyroxine*
- iv) endocrine gland which secretes this hormone. *Thyroid gland*

31. Observe the picture given below and answer the following questions.

- i) Name the type of movement shown by the pea plant shown below:



0.5 ii) Which hormone is responsible for the movement shown by this plant?

31. A lens produces a magnification of -0.5 .

a) Is this a converging or a diverging lens? *converging*

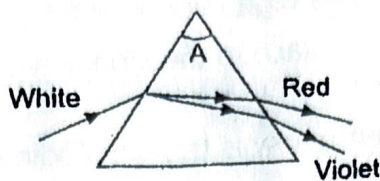
b) If the focal length of this lens is 6 cm, what are the values of object and image distances? *-18, 9*

32. a) State Ohm's Law.

b) Name the physical quantity obtained by finding the slope of VI curve

c) What is the unit of slope?

33. a) In the figure below mark the angle of prism, angle of deviation for red and violet colours.



- b) Explain how the components of white light can be recombined after a prism has separated them.

Section D

34. a) What is long sightedness?
 b) List two causes for the development of this defect.
 c) Draw a diagram to show how this defect can be corrected.

OR

- a) Define the term absolute refractive index
 b) The refractive index of diamond is 2.42. What is the meaning of this statement?
 c) Refractive indices of media A, B, C and D are given below. In which media the speed of light is minimum and maximum?
 d) Find the refractive index of C with respect to B.

Medium	A	B	C	D
Refractive Index	1.33	1.44	1.52	1.65

35. (a) Look at the table given below. Identify and write A, B, C and D

	Name of salt	Formula	Acid	Base
(a)	Calcium Sulphate	$CaSO_4$ A	Sulphuric acid	$Ca(OH)_2$ B
(b)	Ammonium Chloride	NH_4Cl	HCl C	NH_4OH D

- (b) How will the pH of distilled water change if a drop of orange juice is added to it? If a drop of baking soda solution is added to this will there be any change in the pH value? Explain.
 (c) Which gas is collected at the cathode during the chlor-alkali process? Write its use (any 1)

OR

- (a) Some salts are given:

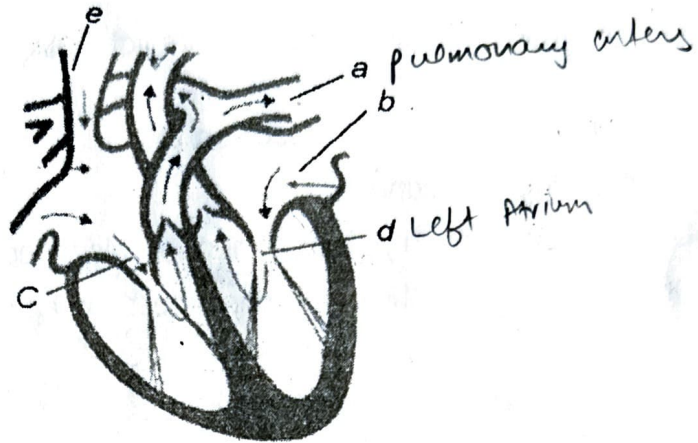
Copper sulphate, Calcium sulphate, Ferrous sulphate

To which family do the salts belong to? *sulphate family*

- (b) What happens on heating baking soda? Write the equation for the same. $Na_2CO_3 + H_2O + CO_2$
 (c) The pH of three solutions is given in the table. Answer the questions that follow:

Solution	pH
P	1
Q	7
R	14

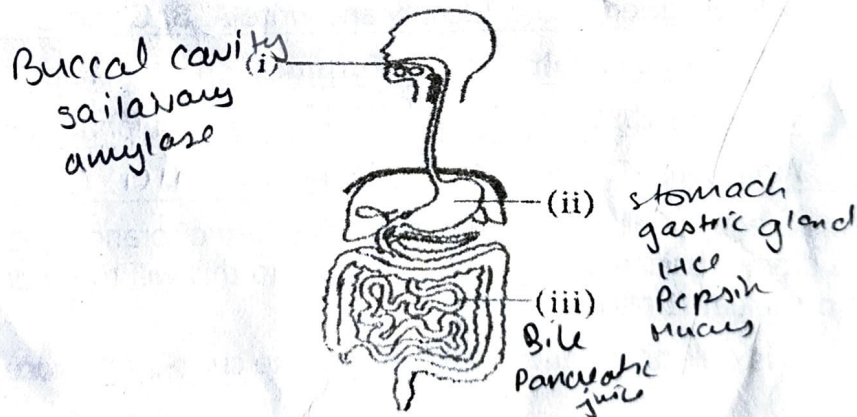
- (i) Which of these could possibly react with zinc to produce hydrogen gas? $P \Delta R$
- (ii) Which of these solutions has high hydrogen ion concentration and which one has high hydroxide ion concentration? $P ; O$
- d) What changes take place in the stomach during indigestion? What is its effect? HCl , pain & irritation
- 36 a) The diagram given below is the longitudinal section of human heart.



- i) Name the blood vessel 'a'.
- ii) What is the function of part 'd'?
- iii) What is the difference in composition of blood in part 'e' and 'b'?
- b) Why is blood circulation in human heart called double circulation?

OR

- 37 a) Study the diagram given below of alimentary canal of human being.



Label the parts (i), (ii) and (iii) and name the digested enzymes secreted by them.

- b) Mr Ayub is suffering from malfunctioning of pancreas. Digestion of which nutrients' will be adversely affected in his body, and why?"

Section E

37. The process of respiration is divided into three phases (i) ventilation of gas exchange organs better known as breathing, (ii) transport of respiratory gases and (iii) cellular respiration. We assimilate chemical energy from the environment and transfer it from molecule to molecule in a step wise fashion within our cells. Although studied separately, these phases represent a continuous sequence and processes of cellular respiration in all life forms is mostly common.

- a) What are the characteristics of aerobic respiration?
- b) In human body, what are the end products when glucose is metabolised anaerobically?
- c) The energy released during the process of respiration is utilised to synthesis a molecule 'X'. Name this molecule.

OR

- c) What type of respiration occurs in the mitochondria of cell?

38. Answer the questions on basis of your understanding of the following passage and related studied concepts:

Rancid fats are formed in human diets in places such as cooking fats and oils, deep fried foods and ethnic foods that are purposely made rancid. However, any fat, given the right conditions and amount of time, can go rancid. It means any food that contains fat can become rancid.

In 1992 a group of 45 children were hospitalized with vomiting, abdominal pain and diarrhoea. The investigation indicated that they had eaten cream filled biscuits that had turned rancid.

- a) What is rancidity?
- b) Some food items are mentioned- potato wafers, butter biscuits, dark green vegetables, fried peanuts. Which of these become unfit for consumption if kept in air for some time?
- c) What steps can be taken to prevent the rancidity of food? (any 2)

OR

- c) How does storing food in refrigerator keep it fresh for longer? (2 points)

39. Study the data given below showing the focal length of three concave mirrors A, B and C and the respective distances of objects placed in front of the mirrors:

Case	Mirror	Focal Length(cm)		Object Distance(cm)
		F	C	
1	A	-20	40	-45 R, I, D
2	B	-13	26	-30
3	C	-30	60	-20

- a) In which one of the above cases the mirror will form a diminished image of the object? Justify your answer.
- b) List two properties of the image formed in case 2.
- c) What is the nature and size of the image formed by mirror C? Draw ray diagram to justify your answer

OR

- c) An object is placed at a distance of 18 cm from the pole of a concave mirror of focal length 12 cm. Find the position of its image.

$$\frac{1}{-20}$$

1 - infinity G - F & P
 2 - C & C G - behind the mirror
 3 - F + C
 4 - C & F
 S - F