



DAV NUPPL Public School

NUPPL Township, Ghatampur, Kanpur Nagar, UP-209206

Assignment: Half yearly
Subject: Science

Class : X
Session: 2024-25

Chapter: 2 ACIDS BASES AND SALTS

MCQS:

- What happens when a solution of an acid is mixed with a solution of a base in a test tube?
(i) Temperature of the solution decreases (ii) Temperature of the solution increases
(in) Temperature of the solution remains the same (iv) Salt formation takes place
(a) (i) and (iv) (b) (i) and (iii) (c) (ii) only (d) (ii) and (iv)
- When hydrogen chloride gas is prepared on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to
(a) absorb the evolved gas (b) moisten the gas
(c) absorb moisture from the gas (d) absorb Cl^- ions from the evolved gas
- Which one of the following salts does not contain water of crystallisation?
(a) Blue vitriol (b) Baking soda (c) Washing soda (d) Gypsum
- In terms of acidic strength, which one of the following is in the correct increasing order?
(a) Water < Acetic acid < Hydrochloric acid (b) Water < Hydrochloric acid < Acetic acid
(c) Acetic acid < Water < Hydrochloric acid (d) Hydrochloric acid < Water < Acetic acid
- What is formed when zinc reacts with sodium hydroxide?
(a) Zinc hydroxide and sodium (b) Sodium zincate and hydrogen gas
(c) Sodium zinc-oxide and hydrogen gas (d) Sodium zincate and water
- Tomato is a natural source of which acid?
(a) Acetic acid (b) Citric acid (c) Tartaric acid (d) Oxalic acid
- Brine is an
(a) aqueous solution of sodium hydroxide (b) aqueous solution of sodium carbonate
(c) aqueous solution of sodium chloride (d) aqueous solution of sodium bicarbonate
- $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ is
(a) washing soda (b) baking soda (c) bleaching powder (d) tartaric acid
- At what temperature is gypsum heated to form Plaster of Paris?
(a) 90°C (b) 100°C (c) 110°C (d) 120°C
- How many water molecules does hydrated calcium sulphate contain?
(a) 5 (b) 10 (c) 7 (d) 2
- An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?
(a) Baking powder (b) Lime (c) Ammonium hydroxide solution (d) Hydrochloric acid
- If a few drops of a concentrated acid accidentally spills over the hand of a student, what should be done?
(a) Wash the hand with saline solution
(b) Wash the hand immediately with plenty of water and apply a paste of sodium hydrogencarbonate
(c) After washing with plenty of water apply solution of sodium hydroxide on the hand
(d) Neutralise the acid with a strong alkali
- One of the constituents of baking powder is sodium hydrogencarbonate, the other constituent is
(a) hydrochloric acid (b) tartaric acid (c) acetic acid (d) sulphuric acid
- Sodium carbonate is a basic salt because it is a salt of a
(a) strong acid and strong base (b) weak acid and weak base
(c) strong acid and weak base (d) weak acid and strong base

Short Answer Type Questions:

15. Name the natural source of each of the following acids
(i) Citric acid (ii) Oxalic acid (iii) Lactic acid (iv) Tartaric acid.
16. A student detected the pH of four unknown solution A, B, C and D as follows 11, 5, 7 and 2. Predict the nature of the solution.
17. (i) Give the constituents of baking powder
(ii) Why cake or bread swells on adding baking powder? Write chemical equation.
18. A white coloured powder is used by doctors for supporting fractured bones.
(a) Write chemical name and formula of the powder.
(b) When this white powder is mixed with water a hard solid mass is obtained. Write balanced chemical equation for the change.
19. Explain the action of dilute hydrochloric acid on the following with chemical equation:
(i) Magnesium ribbon (ii) Sodium hydroxide (iii) Crushed egg shells
20. What will be the action of the following substances on litmus paper? Dry HCl gas, Moistened NH₃ gas, Lemon juice, Carbonated soft drink, Curd, Soap solution.
21. Name the acid present in ant sting and give its chemical formula. Also give the common method to get relief from the discomfort caused by the ant sting.
22. What happens when nitric acid is added to egg shell?
23. A student prepared solutions of (i) an acid and (ii) a base in two separate beakers. She forgot to label the solutions and litmus paper is not available in the laboratory. Since both the solutions are colourless, how will she distinguish between the two?
24. How would you distinguish between baking powder and washing soda by heating?
25. Salt A commonly used in bakery products on heating gets converted into another salt B which itself is used for removal of hardness of water and a gas C is evolved. The gas C when passed through lime water, turns it milky. Identify A, B and C.

Long Answer Type Questions:

26. (i) Dry pellets of a base 'X' when kept in open absorbs moisture and turns sticky. The compound is also formed by chlor-alkali process. Write chemical name and formula of X. Describe chlor-alkali process with balanced chemical equation. Name the type of reaction occurs when X is treated with dilute hydrochloric acid. Write the chemical equation.
(ii) While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?
27. (a) Crystals of a substance changed their colour on heating in a closed test tube but regained it after sometime when they were allowed to cool down. Name the substance and write its formula and explain the phenomenon involved.
(b) Name the compound whose one formula unit is associated with 10 water molecules. How is it prepared? Give equations of related reactions. Give two uses of the compound.
28. Name the products formed in each case when
(a) hydrochloric acid reacts with caustic soda.
(b) granulated zinc reacts with caustic soda.
(c) carbon dioxide is passed into lime water.
29. Compounds like alcohols and glucose also contain hydrogen but are not categorised as acids. Discuss an activity to prove it.
30. Describe an activity with diagram to illustrate that the reaction of metal carbonates and metal bicarbonates with acids produces carbon dioxide. Write the relevant equations of all the reactions that take place. Name any two forms in which calcium carbonate is found in nature.

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.

31. **Assertion (A)** : The acid must always be added to water with constant stirring.

Reason (R) : Mixing of an acid with water decreases the concentration of H^+ ions per unit volume.

32. **Assertion (A)** : Copper sulphate crystals contains water of crystallisation.

Reason (R) : Water of crystallisation is the fixed number of molecules of water present in one formula unit of salt.

33. **Assertion (A)**: The chemical name of bleaching powder is calcium oxychloride.

Reason (R): Bleaching powder is used as an oxidising agent in chemical industries.

Case study-based questions:

Chemically, plaster of paris (POP) is calcium sulphate hemihydrate, i.e., containing half molecule of water of crystallisation. It is represented by the formula, $CaSO_4 \cdot \frac{1}{2}H_2O$. Half molecule of water of crystallisation means that one water molecule is shared by two formula units of $CaSO_4$. Hence, we also represent its formula as $(CaSO_4)_2 \cdot H_2O$. The name, Plaster of paris, was given to this compound because for the first time, it was made from gypsum which was mainly found in Paris.

1. The difference of water molecules in gypsum and plaster of Paris is

(a) $5/2$ (b) 2 (c) $1/2$ (d) $3/2$

2. Plaster of Paris hardens by

(a) giving off CO_2 (b) changing into $CaCO_3$ (c) combining with water (d) giving out water.

3. Which of the following statements is incorrect?

(a) Plaster of Paris is used to ornate designs on walls and ceilings

(b) On heating gypsum above 373 K, $CaSO_4$ is obtained

(c) Dead burnt plaster is $CaSO_4 \cdot 2H_2O$

(d) Setting of plaster is due to its hydration into gypsum

4. Select the incorrect statement with respect to gypsum

(a) It is slightly soluble in water

(b) It is also known as alabaster

(c) On heating gypsum at 373 K, it loses water molecules and becomes calcium sulphate hemihydrate

(d) Chemical formula of gypsum is $CaSO_4 \cdot \frac{1}{2}H_2O$

5. Plaster of Paris is obtained by

(a) adding water to calcium sulphate. (b) adding sulphuric acid to calcium hydroxide

(c) heating gypsum to a very high temperature (d) heating gypsum to $100^\circ C$

Physics

Magnetic Effect of Electric Current

Multiple Choice Questions:

1. Which of the following correctly describes the magnetic field near a long straight wire?

(a) The field consists of straight lines perpendicular to the wire.

(b) The field consists of straight lines parallel to the wire.

(c) The field consists of radial lines originating from the wire.

(d) The field consists of concentric circles centred on the wire.

2. At the time of short circuit, the current in the circuit.

(a) reduces substantially. (b) does not change.

(c) increases heavily. (d) vary continuously.

3. The rating of a fuse connected in the lighting circuit is _____.

(a) 5 A (b) 15 A

(c) 0 A (d) 10 A

4. Q:4 The core of electromagnet is:

(a) Soft iron (b) Nickel

(c) copper (d) Steel

5. An electric charge in uniform motion produces:
 - (a) an electric field only
 - (b) a magnetic field only
 - (c) both electric and magnetic fields
 - (d) None electric and magnetic fields
6. The magnetic field lines always begin from
 - (a) N-pole and end on S-pole.
 - (b) S-pole and end on N-pole.
 - (c) start from the middle and end at N-pole.
 - (d) start from the middle and end at S-pole.
7. The magnetic field is the strongest at
 - (a) middle of the magnet.
 - (b) north pole.
 - (c) south pole.
 - (d) both poles.

Assertion-Reason Type Questions:

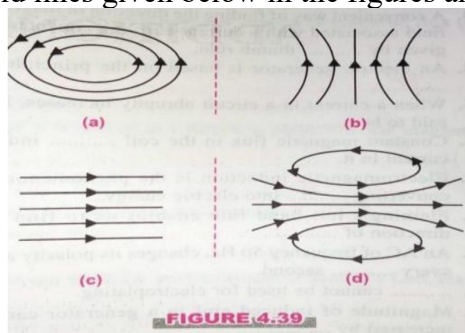
Two statements are given-one labelled as Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

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

1. Q:1 **Assertion:** Magnetic field lines do not intersect.
Reason: Magnetic field lines are closed curves.
2. **Assertion:** A compass needle gets deflected when electric current is passed through the nearby metallic wire.
Reason: The S.I unit of magnetic field strength is Oersted.
3. **Assertion:** A current carrying solenoid behaves like a bar magnet.
Reason: When soft iron is placed inside the solenoid it can also be magnetised.
4. **Assertion:** Compass is a small magnet and gives direction of magnetic field lines.
Reason: It gets deflected when brought near a bar magnet.

Case study based questions:

Study the magnetic field lines given below in the figures and answer the following questions.



1. The magnetic field represented by Fig. 4.39 (a) is due to:
 - (a) A source of uniform magnetic field
 - (b) A source of non-uniform magnetic field
 - (c) A bar magnet
 - (d) A straight current-carrying conductor
2. The magnetic field represented by Fig. 4.39 (b) is/due to:
 - (a) A circular coil
 - (b) A solenoid
 - (c) Uniform
 - (d) A straight conductor
3. The magnetic field represented by Fig. 4.39 (c) is due to:
 - (a) A bar magnet
 - (b) Non-uniform magnetic field
 - (c) A straight current-carrying conductor.
 - (d) Uniform magnetic field
4. The magnetic field lines Fig. 4.39 (d) represented the magnetic field due to:
 - (a) A straight current-carrying conductor
 - (b) A circular coil
 - (c) A solenoid
 - (d) A source of uniform magnetic field
5. Two organs where magnetic field is produced are

(a) Heart and lungs

(b) Heart and brain

(c) Brain and lungs

(d) Heart and Liver

Short Answer type Questions:

1. A compass needle is placed near a current-carrying wire. State your observation for the following cases, and give reason for the same in each case.
 - (a) Magnitude of electric current in the wire is increased.
 - (b) The compass needle is displaced away from the wire.
2. Why and when does a current carrying conductor kept in magnetic field experiences force? List the factors on which direction of force will depend.
3. Distinguish between a bar magnet and an electromagnet.

Long Answer type Questions:

1. What is a solenoid? Draw a diagram to show field lines of the magnetic field through and around a current carrying solenoid. State the use of magnetic field produced inside a solenoid.
List two properties of magnetic lines of force.
2. A current carrying conductor is placed in a magnetic field now answer the following.
 - (i) List the factors on which the magnitude of force experienced by conductor depends.
 - (ii) When is the magnitude of this force maximum?
 - (iii) State the rule which helps in finding the direction of motion of conductor.
 - (iv) If initially this force was acting from right to left, how will the direction of force change if:
 - (a) direction of magnetic field is reversed?
 - (b) direction of current is reversed?

Biology

Ch- Control and Coordination

Tick the correct answer:

1. Which plant hormone promotes dormancy in seeds and buds?
(a) Auxin (b) Gibberellin (c) Cytokinin (d) Abscisic acid
2. Roots of plants are:
(a) positively geotropic (b) negatively geotropic (c) positively phototropic (d) None of these
3. Movement of sunflower in accordance with the path of Sun is due to
(a) Chemotropism (b) Geotropism (c) Phototropism (d) Hydrotropism
4. A part of the body which responds to the in-structions sent from nervous system is called
(a) receptor (b) effector (c) nerves (d) muscles
5. A microscopic gap between a pair of adjacent neurons over which nerve impulses pass is called
(a) neurotransmitter (b) dendrites (c) axon (d) synapse

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.
6. **Assertion(A) :** Insulin regulates blood sugar level.
Reason (R) : Insufficient secretion of insulin will cause diabetes.
 7. **Assertion(A) :** Animals can react to stimuli in different ways.
Reason (R) : All animals have a nervous system and an endocrine system involving hormones.
 8. **Assertion(A):** A receptor is a specialized group of cells in a sense organ that perceive a particular type of stimulus.
Reason (R) : Different sense organs have different receptors for detecting stimuli.
 9. **Assertion(A):** A nerve impulse is an electrochemical event.
Reason (R) : In a nerve impulse there are changes in the resting potential which spreads down the nerve fibre.

10. **Assertion(A)** : The brain is also known as the central nervous system.

Reason (R) : Central nervous system controls and regulates the voluntary actions.

Answer the following questions:

1. Posture and equilibrium of the body are maintained by which part of the brain?
2. Which plant hormone promotes growth? How does it promote the growth of tendrils around support?
3. Answer the following questions:
 - Draw the diagram of the neuron.
 - What are the parts of neurons?
 - Where is information acquired
 - How does impulse travel?
4. Why does an organism need control and coordination?
5. Name the plant hormones responsible for elongation of cells.
6. All information for our environment is detected by specialized tips of some nerve cells. Mention the name given to such tips and also mention where are they located.
7. Name the one organ where growth hormones is synthesized in man and plants.
8. Name the part of the brain which controls posture and balance of the body.
9. How do we detect the smell of an agarbatti (incense stick)?
10. Give reason to explain why endocrine glands release their secretions into the blood directly.
11. Give an example of a plant hormone that promotes growth.
12. How do auxins promote the growth of a tendril around a support?
13. Why are some patients of diabetes treated by giving injections of insulin?
14. What are the difference between endocrine and exocrine gland?
15. What is the function of receptors in our body? Think of situations where receptors do not work properly. What problems are likely to arise?
16. A boy runs on seeing a stray dog. His breathing becomes very fast and blood pressure also increases. Name the hormone found to be high in his blood and the gland which produces it
17. Pituitary gland is often termed as master endocrine gland why? Which is the master of master gland?
18. An old man is advised by his doctor to take less sugar in his diet. Name the disease from which the man is suffering. Mention the hormone due to imbalance of which he is suffering from this disease. Which endocrine gland secretes this hormone?
19. What is synapse? How does a message of an impulse transmit through a synapse?
20. Name the hormones that are released in human males and females when they reach puberty?
21. Why is it important for us to have iodized salt in our diet ? Name the disease caused due to deficiency of iodine and mentions its main symptom.
22. Name the hormones required for followings. Also mention the name of endocrine gland for which that is secreted (a) Conversion of glycogen into glucose (b) Stimulation of growth (c) Metabolism of carbohydrates, protein and fat
23. a) Nerve input signal travelled only up to the spinal cord and gave output signal for a response. What type of action did the body show voluntary or involuntary? (b) Draw a nerve pathway for the above action and suggest specific terms for input nerve and output nerve.
24. What are Phytohormones? Name any 4 Phytohormones and mention their functions.
25. Draw the diagram of human brain and label the parts.

Case study based questions:

1. If the body design in the squirrel relied only on electrical impulses via nerve cells, the range of tissues instructed to prepare for the coming activity would be limited. On the other hand, if a chemical signal were to be sent as well, it would reach all cells of the body and provide the wide-ranging changes needed. This is done in many animals, including human beings, using a hormone called adrenaline that is secreted from the adrenal glands.
 - i) which is the target organ for the adrenaline hormone?
 - ii) Which hormone is released by thyroid gland?
 - iii) Name the hormone released by ovary?

- iv) Name the three hormonal glands located in the brain?
2. Some plants like the pea plant climb up other plants or fences by means of tendrils. These tendrils are sensitive to touch. When they come in contact with any support, the part of the tendril in contact with the object does not grow as rapidly as the part of the tendril away from the object. This causes the tendril to circle around the object and thus cling to it. More commonly, plants respond to stimuli slowly by growing in a particular direction. Because this growth is directional, it appears as if the plant is moving.
 - i) How many type of tropism are shown by plants? Name them.
 - ii) The touch me not plant is an example of which tropism?
 - iii) Name the plants hormone which promotes cell division?
 - iv) Name the plant hormone which inhibits growth?

Ch- How Do Organisms Reproduce?

Tick the correct answer:

1. During favourable conditions, Amoeba reproduces by
(a) multiple fission (b) binary fission (c) budding (d) fragmentation
2. Bryophyllum can be propagated vegetatively by the
(a) stem (b) leaf (c) root (d) flower
3. The period of pregnancy is called
(a) gestation period (b) incubation period (c) ovulation (d) menstruation period
4. The process of release of eggs from the ovary is called
(a) menstruation (b) reproduction (c) insemination (d) ovulation
5. The period during adolescence when the reproductive tissues begin to mature is called
(a) ovulation (b) puberty (c) germination (d) propagation

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.
1. **Assertion(A)** : Asexual reproduction is a primitive type of reproduction.
Reason (R) : Asexual reproduction involves only mitotic cell division.
 2. **Assertion(A)** : Clones are offspring of an organism formed by asexual reproduction.
Reason (R) : Clones have exact copies of DNA as their parent.
 3. **Assertion(A)** : The offspring produced by sexual reproduction is likely to adjust better in environmental fluctuation.
Reason (R) : During the fusion of gametes there is mixing of genetic material from two parents.
 4. **Assertion(A)** : Growth hormone stimulates the growth of different body parts.
Reason (R) : Gonadotropins stimulate the production of sex hormones.

Answer the following questions:

1. What is multiple fission? Give an example.
2. Name two unisexual and two bisexual flowers.
3. Name any four pollinating agencies.
4. Define placenta. Write its function.
5. Define regeneration. Explain with example
6. List and explain in brief three methods of contraception.
7. Name the two types of germ-cells present in human beings. How do they structurally differ from each other? Give two differences.
8. List the parts of human male reproductive system which contribute fluid to the semen. State two advantages semen offers to the sperms.
9. What are the male and female gonads called in human beings? Mention their functions.
10. Explain post-fertilization changes in plants.

11. (a) Explain the terms: (i) Implantation (ii) Tubectomy
(b) What is the average duration of human pregnancy?
12. State in brief the changes that take place in a fertilised egg (zygote) till birth of the child in the human female reproductive system.
13. What happens to the egg when it is not fertilised?
14. Draw a well labelled diagram of male reproductive system.
15. Explain female reproductive system
16. Draw the longitudinal section of the flowers showing its different whorls. Write the function of any two.
17. Draw a well labelled diagram of an ovule. Where is embryo sac found. How many cells are present in an embryo sac?

Case study based questions:

1. Germination starts with the rapid intake of water by the seed through its micropyle. The first visible indication of germination is the swelling of the seed with a resultant increase in weight. It is also accompanied by the softening of the seed coat. Absorption of water causes a number of physiological changes in the seed. Germinating seeds exhibit increased respiratory activity. The embryo produces enzymes which convert the food materials stored in the cotyledons into soluble form usable by the growing embryo. Once the food is made available, cell division activity starts in the growing embryo. The growth of the embryonic tissue ruptures the seed coat.

(i) Which of the following is not connected with the germination of seed?

- (a) It swells (b) The seed coat softened (c) It exhibits photosynthesis (d) It exhibits respiration

(ii) Which among the following are true

- (i) Radicle develops into root (ii) Radicle develops into shoot
(iii) Plumule develops into root (iv) Plumule develops into shoot
(a) (i) and (ii) (b) (i) and (iii) (c) (i) and (iv) (d) (ii) and (iv)

(iii) Which of the following is a part of seed.

- (a) Embryo (b) Radicle (c) Plumule (d) All of the above

(iv) The condition needed for the germination of the seed

- (a) Moisture (b) Temperature (c) Both (A) and (b) (d) None of the above

2. The growing size of the human population is a cause of concern for all people. The rate of birth and death in a given population will determine its size. Reproduction is the process by which organisms increase their population. The process of sexual maturation for reproduction is gradual and takes place while general body growth is still going on. Some degree of sexual maturation does not necessarily mean that the mind or body is ready for sexual acts or for having and bringing up children. Various contraceptive devices are being used by human beings to control the size of population.

1) What should be maintained for healthy society?

- a) Rate of birth and death rate (b) Male and female sex ratio (c) Child sex ratio (d) None of these

2) Which contraceptive method changes the hormonal balance of the body?

- a) Condoms (b) Diaphragms (c) Oral pills (d) Both a) and b)

3) Common sign of sexual maturation in girls is

- a) Low pitch voice
b) Appearance of moustache and beard
c) Development of mammary glands
d) Broadening of shoulders

4) What are common signs of sexual maturation in boys?

- a) Broadening of shoulders
b) Development of mammary glands
c) Broadening of waist
d) High pitch of voice