CBSE

Class X Science

Sample Paper 3

Time: 3 hrs **Total Marks: 80**

General Instructions:

(i) The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.

(ii) Section–A - question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.

(iii) Section–B - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.

(iv) Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range of 50 to 80 words.

(v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.

(vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

(vii) Wherever necessary, neat and properly labeled diagrams should be drawn.

SECTION A

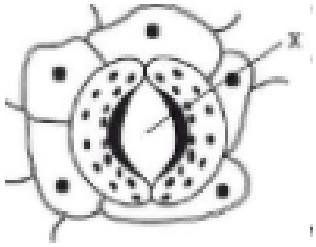
1. Why carbon dioxide is mostly transported in dissolved form? (1)

OR

Enlist the site of synthesis and storage of bile.

2. What happens to the glucose present in the filtrate when it reaches the proximal convoluted tubule? (1)

3. If the structure marked X in the diagram given below is blocked, then which of the processes will not occur? Give reason for your choice. (1)



(a) Transpiration and respiration
(b) Transpiration, photosynthesis and respiration
(c) Respiration, transportation and transpiration
(d) Respiration and photosynthesis

4. Name an indicator which is pink in alkaline solution but turns colourless in acidic solution. (1)

5. A copper coin is kept immersed in a solution of silver nitrate for some time. What will happen to the coin and the colour of the solution? (1)

6. Why is respiration considered an exothermic process? (1)

OR

What happens chemically when quicklime is added to water filled in a bucket?

7. What type of chemical bonds are formed by carbon? Why? (1)

8. What is meant by catenation? Name two elements which exhibit the property of catenation. (1)

9. What are amphoteric oxides? Give two examples of amphoteric oxides. (1)

OR

State one major difference between covalent and ionic bonds and give one example each of covalent and ionic compounds.

10. What is the term used to define the ratio of potential difference and current? (1)

11. A ray of light is incident on a plane mirror at an angle of 30°. What is the angle of reflection? (1)

OR

Explain why, a ray of light passing through the centre of curvature of a concave mirror gets reflected back along the same path.

12. Why are copper wires used as connecting wires? (1)

OR

Name the device used to measure the electric current in the circuit.

13. Name the phenomenon due to which the stars seem higher in the sky than they actually are. (1)

For question numbers 14, 15 and 16, two statements are given—one labelled 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 the correct explanation of the assertion.
b) Both A and R are true, but R is not the correct explanation of the assertion.
c) A is true, but R is false.
d) A is false, but R is true.

14. **Assertion**: Arteries are thick walled and elastic in nature. (1)
Reason: Arteries have to transport blood away from the heart.

15. **Assertion**: When white light passes through a glass prism, red colour is deviated the least.
Reason: Red colour has the minimum speed in the glass prism. (1)

OR

Assertion: When we stand close to the convex mirror our image is virtual, erect and diminished.
Reason: When object lies anywhere between pole and infinity of convex mirror, the image formed is virtual, erect and diminished.

16. **Assertion:** Electrical appliances with metallic body have three connections, whereas an electric bulb has a two-pin connection.
Reason: Three pin connections reduce heating of connecting wires. (1)

Answer Q. No 17 - 20 contain five sub-parts each. You are expected to answer any four subparts in these questions.

17. Read the following and answer any **four** questions from 17 (i) to 17 (v)
Radhika went to an electronic shop to get her radio repaired. The electrician required resistances of 3 Ω and 14 Ω to repair the radio set. He had a large number of 4 Ω resistors. So, he made attempts but could not get the correct combination of 3 Ω and 14 Ω resistances. Radhika has studied the combination of resistors and helped the electrician to arrange the 4 Ω resistors to obtain the required resistances.

(i) How would Radhika have arranged the 4 Ω resistors to obtain the 3 Ω resistance?
a) Two parallelly connected 4 Ω resistor in parallel with four 4 Ω parallelly connected resistors
b) Two parallelly connected 4 Ω resistors in series with four 4 Ω parallelly connected resistors
c) Two 4 ohms resistors parallel to one another
d) Four 4 Ω resistor in parallel combination with one another

(ii) How many 4 Ω resistors are used to obtain the 14 Ω resistance?

a) 5
b) 3
c) 4
d) 2

(iii) How did Radhika obtain the 14 Ω resistance using the 4 Ω resistors?

a) By connecting three serially connected 4 Ω in parallel with two 4 Ω resistors
b) By connecting three 4 Ω resistors in series with one another
c) By connecting five 4 Ω resistors in parallel combination with another
d) None of the above combination can give 14 Ω resistance

(iv) What happens to the current drawn from the power supply when it passes through a parallel combination of appliances?

a) All appliances have same current
b) Current across all appliances will fall to zero after sometime.
c) Current across all appliances are different
d) If one appliance stops working each and every appliance in the circuit stops

(v) What happens to the current drawn from the power supply when it passes through a series combination of appliances?

a) All appliances have different current
b) Current across all appliances will fall to zero after sometime.
c) If one appliance stops working other appliances in the circuit continues to work
d) If one appliance stops working each and every appliance in the circuit stops

18. Read the following and answer any **four** questions from 18 (i) to 18 (v)

Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis. It is the process by which autotrophs take in substances from the outside and convert them into stored forms of energy. (1×4)

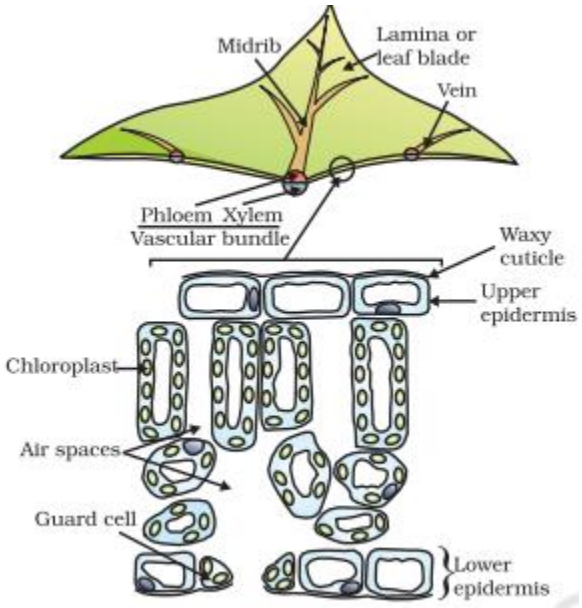
(i) Which of the following acts as an internal energy reserve in plants?

a) Starch
b) Glycogen
c) Chitin
d) Cellulose

(ii) Which of the following processes are not a part of the process of photosynthesis?

a) Absorption of light energy by chlorophyll
b) Conversion of light energy to chemical energy and splitting of water molecules
c) Oxidation of carbon dioxide to carbohydrates
d) Reduction of carbon dioxide to carbohydrates

(iii) Which of the following structures is absolutely essential for the process of photosynthesis?



a) Lower epidermis
b) Chloroplasts
c) Phloem
d) Waxy cuticle

(iv) The following experiment proves that

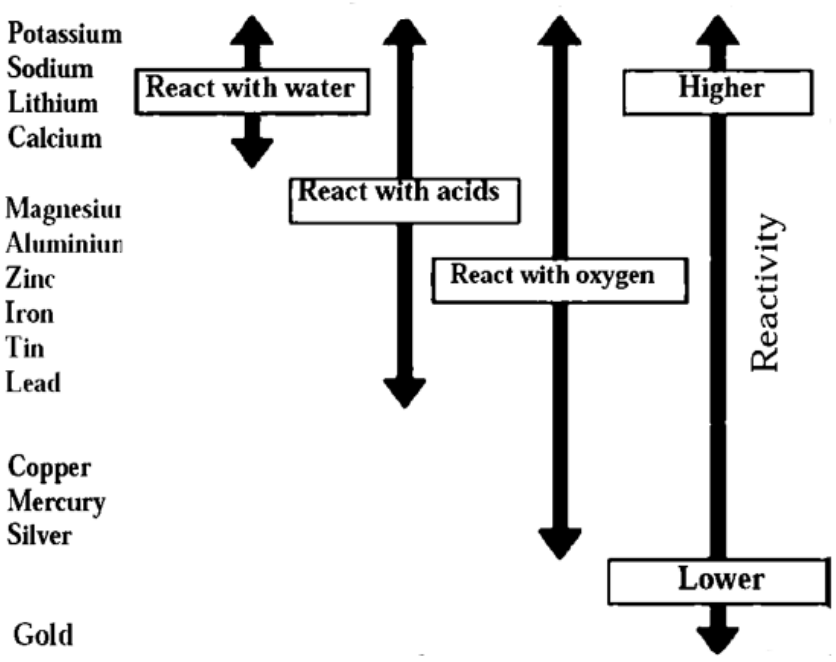
a) Light is necessary for photosynthesis
b) Carbon dioxide is necessary for photosynthesis
c) Chlorophyll is necessary for photosynthesis
d) Oxygen is necessary for photosynthesis

(v) What is the role of stomata in process of photosynthesis?

a) Gaseous exchange
b) Absorption of light
c) Transfer of nutrients
d) Emission of light

19. Read the following and answer any **four** questions from 19 (i) to 19 (v) (1×4)

We have seen that reactivity of all metals is not the same. However, the reagents oxygen, water and acids are not useful to determine the relative reactivities of all the metals, as all the metals do not react with them. The displacement reaction of metals with solutions of salts of other metals serves this purpose. If a metal A displaces another metal B from the solution of its salt then it means that the metal A is more reactive than the metal B.



Metal A + Salt solution of metal B ⟶ Salt solution of metal A + Metal B

Scientists have developed the reactivity series by doing many experiments of displacement reaction. The arrangement of metals in the increasing or decreasing order of reactivity is called the reactivity series of metals. The most reactive metal potassium is kept at the top of the series and the least active metal gold is at the bottom of the list. Metals are divided into the following groups according to their reactivity.

1. Highly reactive metals.
2. Moderately reactive metals.
3. Less reactive metals.

(i) Which of the following is the correct arrangement of the given metals in ascending order of their reactivity?

Zinc, Iron, Magnesium, Sodium

a) Zinc > Iron > Magnesium > Sodium
b) Sodium > Magnesium > Iron > Zinc
c) Sodium > Zinc > Magnesium > Iron
d) Sodium > Magnesium > Zinc > Iron

(ii) Which one of the following metals do not react with cold as well as hot water?

a) Na
b) Ca
c) Mg
d) Fe

(iii) Which one of the following four metals would be displaced from the solution of its salts by other three metals?

a) Mg
b) Ag
c) Zn
d) Cu

(iv) Which of the following can undergo a chemical reaction?

a) $MgSO_4$ + Fe
b) $ZnSO_4$ + Fe
c) $MgSO_4$ + Pb
d) $CuSO_4$ + Fe

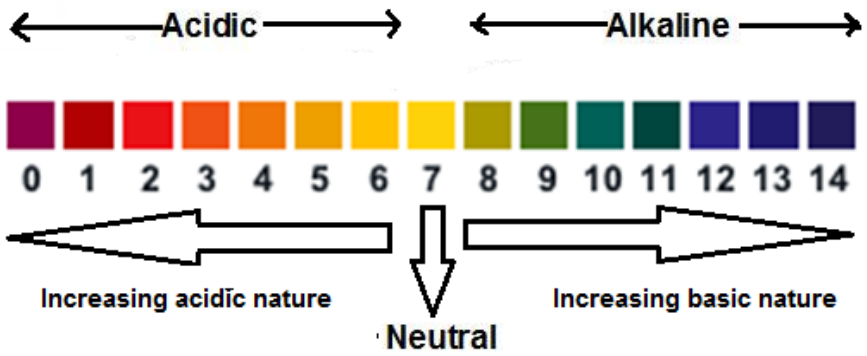
(v) Which of the following metals catch fire on reaction with air?

a) Magnesium
b) Manganese
c) Potassium
d) Calcium

20. Read the following and answer any **four** questions from 20 (i) to 20 (v) (1×4)

Sørenson devised a scale known as the pH scale on which the strength of acid and basic solutions could be represented by making use of hydrogen ion concentration. The p in pH stands for 'potenz' in German. pH of a solution: pH of a solution is the negative logarithm to the base 10 of the hydrogen ion concentration expressed in mole per litre.

$$pH = -\log_{10}(H^+)$$



pH paper is used to examine whether a substance is acidic or alkaline. If pH value is 7, it indicates a neutral substance. It means the substance is neither acidic nor alkaline. The pH value of pure water is 7. When pH value is greater than 7, the substance is alkaline and when it is less than 7, it is acidic. A colour chart marked with pH values is available along with a pH paper. The colour change produced when a pH paper is dipped in a solution is compared with the colour chart to find whether the solution is acidic or alkaline in nature.

(i) When more and more water is diluted with acids its H^+ ion concentration will
a) increase
b) decrease
c) remains the same
d) depends on the type of acids

(ii) Which of the following statement is correct regarding pH Scale?
(i) It is the negative logarithm of H+ ion concentration of a given solution.
(ii) It is the positive logarithm of H+ ion concentration of a given solution.
(iii) It is a 14 point scale.
(iv) pH is an example of an extrinsic property.

a) and (iii)
b) and (iii)
c) (i), (iii) and (iv)
d) Only (ii)

(iii) Three unknown solutions are given with pH value of 6, 8 & 9.5 respectively. Which solution will contain the maximum OH^- ion?
a) Solution sample-1
b) Solution sample-2
c) Solution sample-3
d) Data is insufficient

(iv) Range of pH scale is

a) 7 to 10
b) 0 to 10
c) 0 to 14
d) 7 to 14

(v) In which of the following field pH scale is important for measurements?

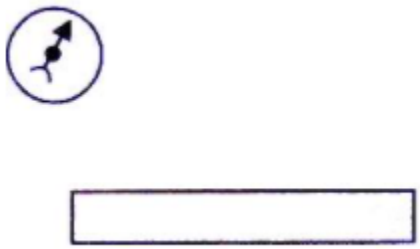
a) Medicine
b) Forestry
c) Food Science
d) All of the above

SECTION B

21. What are the two ways in which you can trace the magnetic field pattern of a bar magnet? (2)

OR

Copy the figure below which shows a plotting compass and a magnet. Label the North pole of the magnet and draw the field line on which the compass lies.



22. What do you understand by the term "electric potential" (or potential) at a point? What is the unit of electric potential? (2)

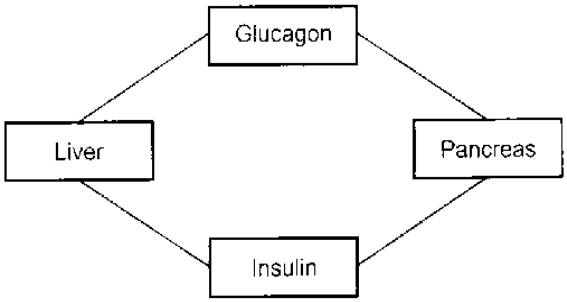
23. Give reasons: (2)

(a) Water enters continuously into the root xylem.
(b) Bile does not contain any enzymes but it is essential for digestion.

OR

Why does absorption of digested food occur mainly in the small intestine?

24. Study the diagram given below and answer the following questions (2)



(a) Name the pancreatic cells which produce (1) glucagon and (2) insulin.
(b) State the main function of (1) glucagon and (2) insulin.

25. Write two points of difference in the structures of diamond and graphite. (2)

26. In the classification of the then known elements, Mendeleev was guided by two factors. What are those two factors? (2)

Section C

27. What is ozone? How and where is it formed in the atmosphere? Explain how it affects an ecosystem.

OR

What is meant by biological magnification? With the help of a food chain, explain how biological magnification of harmful chemicals can occur. (3)

28. An electrical appliance is rated 200 V–100 W. What is the resistance of the appliance? Five such appliances run simultaneously for 4 hours. What is the energy consumed? Calculate the cost of running these appliances if the per unit cost is Rs 4.60. (3)

29. A concave lens has focal length of 25 cm. At what distance should the object from the lens be placed so that if it forms an image at 20 cm distance from the lens? Also find the magnification produced by the lens. (3)

30. Explain Mendel's experiment on inheritance of characters considering only one visible contrasting character in pea plant. (3)

31. How will an organism be benefited if it reproduces through spores? (3)

32. Plants use a variety of techniques to release their wastes. Count those techniques. (3)

33. You are provided with three test tubes A, B and C which contain distilled water, acidic and basic solutions. If you are given blue litmus paper only, how will you identify the nature of the solutions in the three test tubes? (3)

Section D

34. (5)

(a) Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

(b) Explain how the lungs are designed in human beings to maximise the area for exchange of gases. Why does the air passage not collapse when there is no air in it?

OR

(a) Name the human male reproductive organ which produces sperms and secretes hormones. Write the functions of the hormone secreted.

(b) Name the parts of the human female reproductive system where
(i) fertilisation and (ii) implantation occur
Explain how the embryo gets nutrition inside the mother's body.

35. Name the type of mirrors used in (a) a solar furnace and (b) a rear-view mirror. Draw labelled diagrams to show the formation of an image in each of these two cases. Which of these mirrors could also form a magnified and virtual image of an object? Illustrate with the help of a ray diagram. (5)

36. A Chemistry quiz contest was being held in the school for students. The quiz master said: (5)

An element has the electronic configuration 2, 8, 7.

(a) What is the atomic number of this element?

(b) Is it a metal, non-metal or metalloid?

(c) Which of the elements N, F, P and Ar show similarity with this element?

(d) We use a compound of this element in our food. Identify that compound.

(e) A compound of this element causes hardness of water. Identify that compound.

OR

The following table shows the position of six elements A, B, C, D, E and F in the periodic table.

Group / Period	1	2	3 to 12	13	14	15	16	17	18
2	A					B			C
3		D			E				F

Using the above table, answer the following questions:
(a) Which element will form only covalent compounds?
(b) Which element is a metal with valency 2?
(c) Which element is a non-metal with valency 3?
(d) Out of D and E, which one has a larger atomic radius and why?
(e) Write the common name for the family of elements C and F.

CBSE
Class X Science
Sample Paper 3 – Solution

SECTION A

1. Carbon dioxide is more soluble in water than oxygen. Hence, it is transported in soluble form.

OR

Site of synthesis of bile: Liver
Site of storage of bile: Gall bladder

2. The glucose present in the filtrate is reabsorbed when it reaches the proximal convoluted tubule.

3. (b) Transpiration, photosynthesis and respiration
Exchange of gases and water occurs through the stomata in plants. If stomata are blocked, exchange will not occur and processes of transpiration, photosynthesis and respiration will also not occur.

4. An indicator which is pink in alkaline solution but turns colourless in acidic solution is Phenolphthalein.

5. Copper coin will get a shining greyish white coating of silver metal. The colour of the solution will turn blue.

6. Respiration is an exothermic process because heat energy is produced during this process.

OR

When quicklime is added to water, it forms slaked lime along with evolution of heat. There will be a rise in temperature of the bucket.

7. Carbon forms covalent bonds because it can achieve the inert gas electron arrangement only by sharing of electrons.

8. The property of self-combination of carbon atoms to form long chains is called catenation. Carbon and Silicon exhibit the property of catenation.

9. Those metal oxides which show basic as well as acidic behaviour are known as amphoteric oxides.
Example: Aluminium oxide and zinc oxide.

OR

Ionic compounds conduct electricity when dissolved in water or melted whereas covalent compounds do not conduct electricity.
Ionic compound - NaCl
Covalent compound - CO_2

10. Resistance is the ratio of potential difference and current.

11. According to the second law of reflection, angle of incidence is equal to the angle of reflection. Therefore, angle of reflection=30°

OR

A ray of light passing through the centre of curvature of a concave mirror is reflected back along the same path because it strikes the concave mirror at right angles to its surface due to which the angle of incidence and angle of reflection both are 0°.

12. The copper wires have low electrical resistivity.

OR

Ammeter

13. Atmospheric refraction of light.

14. b) Both A and R are true, but R is not the correct explanation of the assertion.
Arteries are thick-walled and elastic in nature because they carry blood under tremendous pressure.

15. c)A is true, but R is false.
When white light passes through a glass prism, red colour is deviated the least because red colour has maximum speed in the prism.

16. c) A is true, but R is false.
The third pin is the earth wire. This wire helps in passing extra charges to the earth hence prevent electrical appliances from getting damaged.

17.

(i) b) Two parallelly connected 4 Ω resistors in series with four 4 Ω parallelly connected resistors
If the two 4 Ω resistors are connected in parallel, then the equivalent resistance is 2 Ω, and when four 4 Ω resistors are connected in parallel, the equivalent resistance is 1 Ω. Thus, when these two combinations are connected in series, we get an equivalent resistance of 3 Ω.

(Explanation:

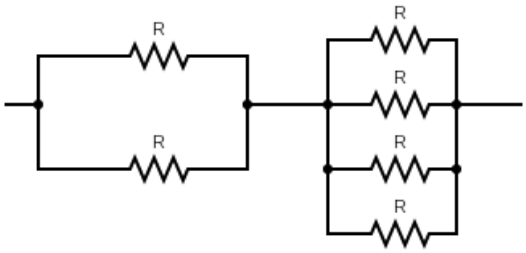
$$\frac{1}{R_{p_1}} = \frac{1}{4} + \frac{1}{4}$$

$$R_{p_1} = \frac{4}{2} = 2\ \Omega$$

$$\frac{1}{R_{p_2}} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} = 1\Omega$$

$$R_{p_2} = 1\ \Omega$$

$$R_s = 2 + 1 = 3\ \Omega)$$



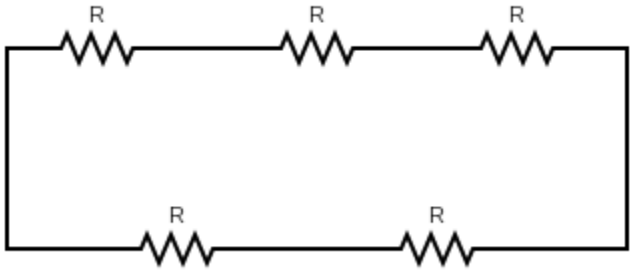
(ii) a) 5

Five 4 Ω resistors are used to obtain a 14 Ω resistance.

(iii) a) By connecting three serially connected 4 Ω in parallel with two 4 Ω resistors

When three 4 Ω resistors are connected in series, the equivalent resistance is 12 Ω, and when two 4 Ω resistors are connected in series, the equivalent resistance is 8 Ω. When these two combinations are connected in parallel, we get 14 Ω.

Explanation:



(iv) c) current across all appliances are different

The current drawn from the power supply is high as every appliance draws the required amount of current according to their power rating for their proper functioning. Thus, the current across each appliance connected in parallel is different.

(v) c) If one appliance stops working other appliances in the circuit continues to work

18.

(i) a) The carbohydrates which are not used immediately are stored in the form of starch, which serves as the internal energy reserve to be used as and when required by the plant.

(ii) c) During photosynthesis, there is reduction of carbon dioxide to carbohydrates in the form of glucose.

(iii) b) Chloroplasts contain chlorophyll pigment which traps sunlight for photosynthesis.

(iv) c) The variegated leaf experiment proves that chlorophyll is necessary for photosynthesis.

(v) a) Stomata assist in the process of massive gaseous exchange during photosynthesis.

19.

(i) d) Sodium > Magnesium > Zinc > Iron

(ii) d) Fe. Iron does not react with cold as well as hot water.

(iii) b) Ag. Silver can be displaced from the solution of its salts by magnesium, zinc, copper.

(iv) d) $CuSO_4$ + Fe. Copper can be displaced from the solution of its salts by iron.

$$CuSO_4 + Fe \longrightarrow FeSO_4 + Cu\downarrow$$

(v) c) Potassium. Being at the top od reactivity series K violently reats with air and catches fire

20.

(i) b) decreases. When more and more water is diluted with acids its H+ ion concentration will decreases.

(ii) c)(i), (iii), (iv).

(iii) c) Solution sample-3. When pH value is greater than 7, the substance is alkaline and when it is less than 7, it is acidic.

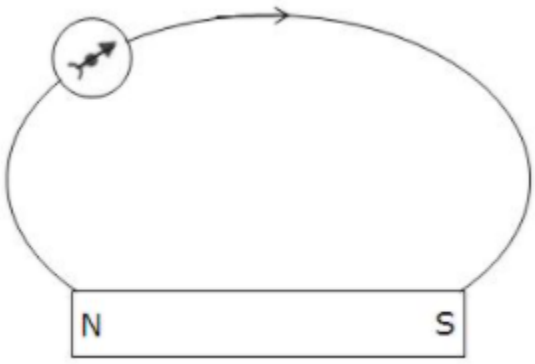
(iv) d) 7 to 14. Range of pH scale is 7 to 14.

(v) d) pH scale is important for measurements medicine, forestry and food science.

SECTION B

21. (i) By using iron filings
(ii) By using compass

OR



As the north pole of the magnetic needle is pointing in the opposite direction, so the nearer end of the magnet will be north pole.

22. The electric potential (or potential) at a point in an electric field is defined as the work done in moving a unit positive charge from infinity to that point.
Unit of electric potential is volt.

23.

(a) Cells of the root are in close contact with the soil and so actively take up ions. The ion concentration increases inside the root and hence, osmotic pressure increases the movement of water from the soil into the root which occurs continuously.
(b) The bile salts breakdown the fat present in the food into smaller globules. This increases the efficiency of the enzymes in the small intestine to digest the food effectively.

OR

The small intestine has millions of tiny finger-like projections called villi. These villi increase the surface area for more efficient food absorption. Within these villi, many blood vessels are present that absorb the digested food and carry it to the bloodstream. From the bloodstream, the absorbed food is delivered to each and every cell of the body. Hence, the absorption of digested food occurs mainly in the small intestine.

24.

(a) Glucagon – alpha cells, insulin – beta cells.
(b) Glucagon stimulates the breakdown of glycogen into glucose in the liver and raises the blood sugar level. Insulin controls high blood sugar level in the body.

25.

Diamond	Graphite
(i) Each carbon atom is linked to four other carbon atoms. (ii) A diamond crystal has a tetrahedral arrangement of carbon atoms.	(i) Each carbon atom is joined to only three other carbon atoms. (ii) A graphite crystal has flat hexagonal rings structure.

26. Mendeleev was guided by two factors:

(i) Increasing atomic masses.

(ii) Grouping together of elements having similar properties.

Section C

27. Ozone is a molecule formed by three atoms of oxygen. The ozone layer forms a thick layer in the stratosphere, encircling the Earth. In the first step, solar ultraviolet radiation breaks apart one oxygen molecule (O_2) to produce two oxygen atoms (2O). In the second step, each of these highly reactive atoms combines with an oxygen molecule to produce an ozone molecule (O_3).

It may affect an ecosystem in the following ways:

(a) At the surface of the Earth, it is a deadly poison for all lower forms of life.

(b) If this layer gets depleted, then it may cause cancer in human beings.

OR

Biomagnification is the increasing concentration of a substance, such as a toxic chemical, in the tissues of organisms at successively higher levels in a food chain.

In the food chain,

Grass ----> Grasshopper ----> Frog ----> Snake ---->Peacock

Peacock occurs at the highest trophic level (on the extreme right); therefore, it will have the maximum concentration of harmful chemicals in its body.

28. Rating of the electrical appliance is 200 V–100 W.

Therefore, the resistance of the appliance is

$$P = \frac{V^2}{R}$$

$$\therefore R = \frac{V^2}{P} = \frac{200^2}{100}$$

$$\therefore R = 400\ \Omega$$

Total power consumed by 5 bulbs will be 500 W.

Hence, for a four-hour operation, the energy consumed is

$$E = Pt$$

$$\therefore E = 500 \times 4 = 2000\ \text{Wh} = 2\ \text{kWh}$$

Cost of electricity per unit is Rs 4.60.

Hence, the total cost is

$$\text{Cost} = 2 \times 4.60 = \text{Rs. } 9.2$$

29. A concave lens always forms a virtual, erect image on the same side of the object.

v = -20 cm, f = -25 cm, u =?

1/v -1/u = 1/f 1/u = 1/ (-20) - 1/ (-25) 1/u = -1/100

Thus, u = -100cm

Thus, object distance is 100 cm.

Magnification= v/u = -20/ (-100) = + 0.5

Thus, image is erect, virtual and is half of the size of object.

30. Mendel's experiment can be studied in the following ways:

(i) Mendel first crossed pure-bred, tall pea plants with pure-bred, short pea plants and found that tall pea plants were produced in the F_1 generation.

(ii) Mendel crossed tall pea plants of the F_1 generation and found that tall plants and dwarf plants are in the ratio 3:1. Mendel observed that the dwarf trait of the pea plant which had disappeared in the F_1 generation progeny reappeared in the F_2 generation. He concluded by saying that traits are inherited independently.

31. <u>Advantages of reproduction through spores to the organism:</u>

i) Spores come in a wide variety of forms and are produced and dispersed in many different ways.

ii) Spores are very effective, because they are small and light, and so can be carried by wind, water or animals; so they can travel far away from the parent, perhaps to better conditions.

iii) Some spores have thick walls which can give them protection against unfavourable conditions.

iv) Because the spores are so small, the organism can afford to release more of them, so there will be more spores surviving. It does not require much energy to produce a spore.

v) Spores do not need fertilizing and will grow whenever the correct conditions are met.

32. <u>Plants remove their excretory products by the following methods:</u>

1. Gaseous wastes (carbon dioxide) are removed through stomata.
2. Through transpiration, excess water is removed.
3. Through the removal of exudates like resins and gums.
4. Wastes are deposited in the leaves which are removed upon drooping/wilting.

33.

(a) Test the three solutions with blue litmus paper; one solution will change blue litmus red. This solution is acidic.

(b) Test the remaining two solutions with the red litmus paper [which changed in activity (a)]; one solution will change it again to blue. This solution is basic.

(c) So, the third solution is distilled water.

Section D

34.

(a) Separation of oxygenated and deoxygenated blood allows a highly efficient supply of oxygen to the body. This is especially important in birds and mammals which have high energy needs and constantly use energy to maintain their body.

(b) The lungs contain millions of alveoli which provide a surface for the exchange of gases. An extensive network of blood vessels is present in the wall of the alveoli. By lifting our ribs and flattening the diaphragm, the chest cavity becomes spacious. Air is sucked into the lungs and alveoli. The oxygen from the breath diffuses into the blood and carbon dioxide from the blood (brought from all over the body) diffuses out to the air.

The trachea has rings of cartilage around it. These rings of cartilage prevent the trachea from collapsing when we breathe out.

OR

(a) The testes produce sperms and secrete the hormone testosterone which helps in the development of the testes and secondary sexual characters.

(b)

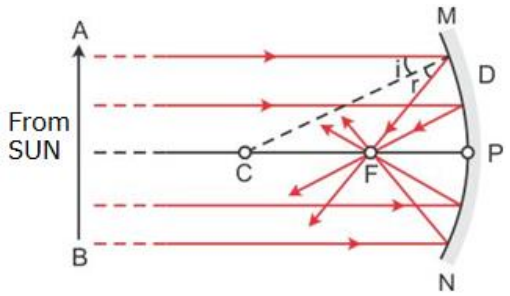
(i) Fertilisation takes place in the fallopian tube.

(ii) Implantation occurs in the uterus.

The embryo gets nourishment from the mother's blood by a special disc-shaped tissue embedded in the uterine wall called the placenta. It contains villi on the embryo's side and blood vessels surrounding the villi on the mother's side. Glucose and oxygen pass from the mother to the embryo through the placenta. Also, waste substances are removed through the placenta and enter the mother's blood.

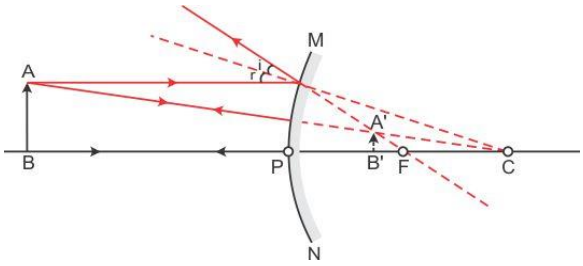
35. The mirror used in a solar furnace is a concave mirror.

Image formed by a concave mirror when placed inside a solar furnace:

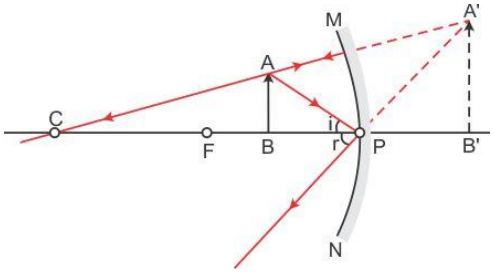


The mirror used as a rear-view mirror is a convex mirror.

Image formed by a convex mirror:



A concave mirror can form a magnified and virtual image. A convex mirror cannot form an enlarged image. When the object is placed between the pole and the focus of the mirror, the image formed is virtual, enlarged and erect.



36. From the electronic configuration 2, 8, 7, it is clear that the compound is chlorine (Cl).

(a) Atomic number: 17

(b) Chlorine is a non-metal.

(c) F, as it belongs to the same group as the element chlorine.

(d) The compound is sodium chloride (NaCl) also known as common salt.

(e) The compound is calcium bicarbonate $Ca(HCO_3)_2$ which causes temporary hardness of water.

OR

(a) Element E will form only covalent compounds.

(b) Element D is a metal with valency 2.

(c) Element B is a non-metal with valency 3.

(d) D, because the atomic size decreases along a period.

(e) Noble gases