BLUE PRINT

S. No.	Chapter Name	Section-A (MCQs & A/R) 1 Mark	Section-B (VSAQs) 2 Marks	Section-C (SAQs) 3 Marks	Section-D (LAQs) 5 Marks	Section-E (Case Study) 4 Marks	Total Marks
		Q. No.	Q. No.	Q. No.	Q. No.	Q. No.	
1	Chemical Reactions and Equations	1(Q17)	1(Q21)		1(Q34)		8
2	Acids, Bases and Salts	2(Q1,2)	1(Q21 OR			1(Q37)	6
3	Metals and Non-metals	3(Q3,4,5)		1(Q27)			6
4	Carbon and its Compounds	2(Q6,7)		1(Q28)			5
5	Life Processes	2(Q8,13)		1(Q30)			5
6	Control and Co-ordination	2(Q14,19)	1(Q22)		1(Q36)		9
7	How do Organism Reproduce	1(Q15)	1(Q23)				3
8	Heredity and Evolution	2(Q16,20)	1(Q26)			1(Q38)	8
9	Light- Reflection and Refraction			1(Q32)			3
10	Human Eye and Colourful World	2(Q9,11)	1(Q24)		1(Q35)		9
11	Electricity	2(Q10,12)				1(Q39)	6
12	Magnetic Effects of Electric Current	1(Q18)		2(Q29, 31)			7
13	Our Environment		1(Q25)	1(Q33)			5
	*** Total Questions (Total Marks)**	**20(20)**	**6(12)**	**7(21)**	**3(15)**	**3(12)**	**80**

* The number given outside the bracket denotes number of questions asked in the sample paper, while the number given inside the bracket denotes marks.

Time Allowed : 3 Hours **Max. Marks : 80**

General Instructions

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

SECTION-A

Select and write one most appropriate option out of the four options given for each of the Questions 1 to 20

1. Which salt can be classified as an acid salt?
(a) Na_2SO_4 (b) BiOCl (c) Pb(OH)Cl (d) Na_2HPO_4

2. Plaster of Paris hardens by –
(a) giving of CO_2 (b) changing into $CaCO_3$ (c) combining with water (d) giving out water

3. Generally, non-metals are not conductors of electricity. Which of the following is a good conductor of electricity?
(a) Diamond (b) Graphite (c) Sulphur (d) Fullerene

4. The electronic configurations of three elements X, Y and Z are X- 2, 8; Y - 2, 8, 7 and Z - 2, 8, 2. Which of the following is correct?
(a) X is a metal (b) Y is a metal
(c) Z is a non-metal (d) Y is a non-metal and Z is a metal

5. The correct order of increasing chemical reactivity is –
(a) Zn < Fe < Mg < K (b) Fe < Mg < Zn < K
(c) Fe < Mg < K < Zn (d) Fe < Zn < Mg < K

6. What does isomerism explain?
(a) A difference in molecular formulae.
(b) A difference in molecular weights.
(c) A difference in chemical properties and structural formulae.
(d) A difference in molecular composition.

7. Which of the following options is false about a soap?
(a) The soap solution in water is neutral and can be used to wash all kinds of fabrics.
(b) Soap forms lather only in soft water.
(c) Soap is a metallic salt of higher fatty acids.
(d) Soap cannot be used in slightly acidic medium.

8. The correct order of processes that occur in urine formation is
(a) glomerular filteration → secretion → reabsorption
(b) secretion → glomerular filteration → reabsorption
(c) glomerular filteration → reabsorption → secretion
(d) secretion → reabsorption → glomerular filteration

9. 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.

10. The length of a wire is doubled and the radius is doubled. By what factor does the resistance change
(a) 4 times as large (b) twice as large (c) unchanged (d) half as large

11. A person got his eyes tested. The optician's prescription for the spectacles reads:
Left eye : – 3.00 D Right eye : – 3.50 D
The person is having a defect of vision called :
(a) presbyopia (b) myopia (c) astigmatism (d) hypermetropia

12. Device used to measure electric current is:
(a) Ammeter (b) Voltmeter (c) Galvanometer (d) Generator

13. Consider the following statements in connection with the functions of the blood vessels marked A and B in the diagram of a human heart as shown.

(i) Blood vessel A – It carries carbon dioxide rich blood to the lungs.
(ii) Blood vessel B – It carries oxygen rich blood from the lungs.
(iii) Blood vessel B – Left atrium relaxes as it receives blood from this blood vessel.
(iv) Blood vessel A – Right atrium has thick muscular wall as it has to pump blood to this blood vessel.
This correct statements are
(a) (i) and (ii) only (b) (ii) and (iii) only (c) (ii), (iii) and (iv) (d) (i), (ii) and (iii)

14. Artificial ripening of fruits is carried out by
(a) Auxin (b) Gibberellin (c) Abscisic acid (d) Ethylene

15. Which out of the following processes does not lead to the formation of clones
(a) Fertilisation (b) Fasion (c) Tissue culture (d) Fragmentation

16. If a homozygous red-flowered plant is crossed with a homozygous white-flowered plant, the offspring would be
(a) Half red-flowered (b) Half white-flowered (c) All red-flowered (d) Half pink-flowered

Directions: Q.No. 17–20 are Assertion - Reasoning based questions: These 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 and R is not the correct explanation of A
(c) A is true but R is false
(d) A is False but R is true

17. **Assertion:** A reducing agent is a substance which can either accept electron.
Reason: A substance which helps in oxidation is known as reducing agent.

18. **Assertion:** A soft iron far placed inside a solenoid carrying current is magnetised.
Reason: Magnetic field inside a long solenoid carrying current is non-uniform.

19. **Assertion:** A person has lost most of its intelligence memory and judgement.
Reason: A person has operated a tumour located in the cerebrum.

20. **Assertion:** Mendel successfully postulated laws of heredity.
Reason: Mendel recorded and analysed results of breeding experiments quantitatively

SECTION-B

Q. no. 21 to 26 are Very Short Answer Questions.

21. What is the combination reaction ? Give one example of a combination reaction which is also exothermic.

OR

Fresh milk has pH of 6. How do you think pH will change as it turns into curd? Explain your answer.

22. Where does cerebro-spinal fluid occur in our body ? Mention any two of its functions.

23. Name the primary sex organs in males and females ?

24. Define angle of deviation. Why do different components of white light split up into spectrum when it passes through a triangular glass prism.

OR

Why does the sky appear dark instead of blue to an astronaut ?

25. Give reason why a food chain cannot have more than four trophic levels.

26. Do genetic combination of mothers play a significant role in determining the sex of a new born ?

SECTION-C

Q.no. 27 to 33 are Short Answer Questions.

27. Define Aqua-regia. State two important properties of it.

28. How was petroleum formed?

29. It is necessary to connect an earth wire to electric appliances having metallic covers. Why? How will you identify earth wire in household circuit?

30. What is the role of valves in the human heart?

OR

What is the function of bicuspid and tricuspid valve?

31. A straight conductor passes vertically through a cardboard sprinkled with iron filings. Show the setting of the iron filings when a weak current is passed in the downward direction. What changes occur if,

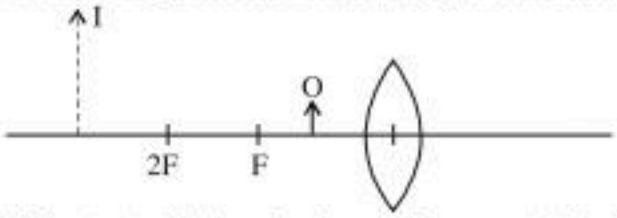
(i) the strength of the current is increased.

(ii) the single conductor is replaced by several parallel conductors with current flowing in the same. direction.

32. A ray of light travelling in air enters obliquely into water. Does the light ray bend towards the normal or away from the normal? Why?

OR

The diagram given below shows an object O and its image I.



Without actually drawing the ray diagram, state the following :

(i) Type of lens (Converging/Diverging)

(ii) Name two optical instruments where such an image is obtained.

(iii) List three characteristics of the image formed if this lens is replaced by a concave mirror of focal length 'f' and an object is placed at a distance 'f/2' in front of the mirror.

33. In the following food chain, only 2J of energy was available to the peacocks. How much energy would have been present in Grass? Justify your answer.

GRASS → GRASS HOPPER → FROG → SNAKE → PEACOCK

SECTION-D

Q.no. 34 to 36 are Long Answer Questions.

34. Write down balanced chemical reactions for given statements.

(a) When iron (III) oxide is heated with aluminium powder, then aluminium oxide and iron metal are formed.

(b) When silver nitrate solution is added to sodium chloride solution, a white precipitate of silver chloride and sodium nitrate solution are formed.

(c) When chlorine gas react with potassium iodide solution, potassium chloride and iodine are formed.

(d) When copper oxide is heated with magnesium powder magnesium oxide and copper are formed.

(e) When a copper strip is placed in a solution of silver nitrate, then copper nitrate solution and silver metal are formed.

OR

(a) $Si_2H_6 + H_2O \longrightarrow Si(OH)_4 + H_2$

(b) $C_2H_6 + Cl_2 \longrightarrow C_2H_5Cl + HCl$

(c) $B_4H_{10} + O_2 \longrightarrow B_2O_3 + H_2O$

(d) $H_2 + N_2 \longrightarrow NH_3$

(e) $CS_2 + O_2 \longrightarrow CO_2 + SO_2$

(f) $N_2O_5 \longrightarrow N_2O_4 + O_2$

(g) $KNO_3 \longrightarrow KNO_2 + O_2$

(h) $NH_4NO_3 \longrightarrow N_2O + H_2O$

(i) $NH_4NO_2 \longrightarrow N_2 + H_2O$

(j) $NaHCO_3 \longrightarrow Na_2CO_3 + H_2O + CO_2$

35. (a) A person is suffering from both myopia and hypermetropia.

(i) What kind of lenses can correct this defect?

(ii) How are these lenses prepared?

(b) A person needs a lens of power + 3D for correcting his near vision and –3D for correcting his distant vision. Calculate the focal lengths of the lenses required to correct these defects.

36. (a) What are 'hormones' ?

(b) List four characteristics of hormones.

(c) Name the hormone required for the following :

(i) Functioning of mammary glands.

(ii) Regulation of calcium and phosphate in blood.

(iii) Lowering of blood glucose.

(iv) Development of moustache and beard in human male.

SECTION-E

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.

37. Read the following case/passage and answer the questions.

Baking Soda is also defined as Sodium Bicarbonate. The Medieval Egyptians first quarried Natron, a natural deposit which mainly consists of Na_2CO_3. They used it as soap. In the year 1971, $NaHCO_3$ was first manufactured by a ***French chemist named Nicolas Leblanc***. It was in the year 1846, John Dwight and Austin Church started a manufacturing unit to produce baking soda using sodium carbonate and carbon dioxide. Solvay process is used for the production of sodium bicarbonate and sodium carbonate industrially. This process is used mainly because it is inexpensive and less number of raw materials are used to produce necessary chemicals. Sodium bicarbonate is widely used in kitchen and in the various household work mainly because of its versatility, usefulness and its cheap price.

(a) What are the raw materials used in the preparation of sodium bicarbonate?

(b) During indigestion, the stomach produces too much acid which can cause pain and irritation. In such cases what are the compounds can be used as antacids?

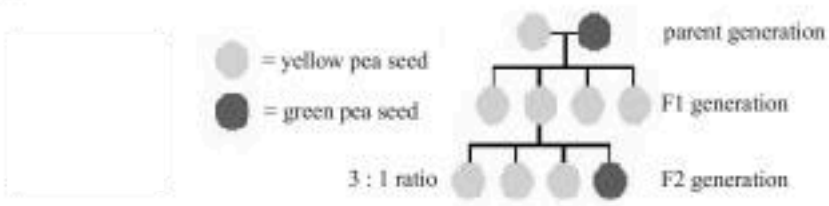
OR

(b) What are the components of backing powder? Mention the use of sodium bicarbonate.

38. Read the following case/passage and answer the questions.

The way in which traits are passed from one generation to the next and sometimes skip generations was first explained by gregor Mendel. By experimenting with pea plant breeding, Mendel developed three principles of inheritance that described the transmission of genetic trait, before anyone know genes existed. Mendel's insight greatly expanded the understanding of genetic inheritance and led to the development of new experimental methods.

(i) Assuring that both parent plants in the diagram below are homozygous, why would all of the F1 generation have yellow phenotype?



(ii) How did Mendel's studies in genetics differ from earlier studies of breeding and inheritance?

(iii) In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over shortness (t). If a plant with RR Tt genotype is crossed with a plant that is rrtt.

(iv) Select the correct match

	Cross	**Progeny**
A.	RRYY × RRYY (Round yellow)	Round, yellow only (Round yellow)
B.	RrYy × RrYy (Round, yellow)	Round yellow and (Round, yellow) round green only
C.	rryy × rryy (wrinkled, green) (wrinkled, green)	Wrinkled, yellow only
D.	RRYY × rryy (Round, yellow)	Round green only (Wrinkled, green)

39. Read the following case/passage and answer the questions.

In many practical applications to have desired value of resistance two or more resistances are required to be combined. This can be done in two ways : in series and in parallel. Sometimes resistances are to be combined in such a way that some resistances be in series and some in parallel. Such a combination is called mixed grouping. If, in an electrical circuit, two or more resistances connected between two points are replaced by a single resistance such that there is no change in the current of the circuit and in the potential difference between those two points, then the single resistance is called the 'equivalent resistance'. When the resistance of a circuit is to be increased, they are combined in series and when heavy current is to be passed, they are combined in parallel so as to decrease the total resistance.

(a) Two resistances of X ohm and Y ohm are connected. In which case the resultant resistance will be

(i) more than X and Y (ii) less than X and Y?

(b) Why we connect a large number of electric bulbs for decorating buildings as during festivals such as Diwali or marriage function in series circuit not in parallel circuit?

(c) What are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series ?

OR

How can three resistors of resistances 2 Ω, 3 Ω and 6 Ω be connected to give a total resistance of

(i) 4 Ω, (ii) 1 Ω

Solution

SAMPLE PAPER-7

1. **(d)** Because it can furnish H^+ ions in solution.

2. **(c)**

3. **(b)** Graphite is an allotrope of carbon which is a non-metal, it is a good conductor of electricity.

4. **(d)** Y is chlorine which is a non-metal. Z is magnesium which is a metal. X is neon which is an inert gas as it has complete octate.

5. **(d)**

6. **(c)** Isomers have same molecular formula, molecular weight and molecular composition but different chemical properties and structural formulae because the properties are based on the position of atoms.

7. **(a)** The soap solution in water is not neutral and cannot be used to wash all kinds of fabrics.

8. **(c)** Correct order for the urine formation is
Glomerular filteration → reabsorption → secretion

9. **(c)** According to Rayleigh's law, scattering $\propto \frac{1}{\lambda^4}$ $\lambda_{Red} > \lambda_{Blue}$ so red light is least scattered in the atmosphere.

10. **(d)** **11.** **(b)** **12.** **(a)**

13. **(d)** Oxygen-rich blood from the lungs comes to the thin-walled upper chamber of the heart on the left, the left atrium. The left atrium relaxes when it is collecting this blood. It then contracts, while the next chamber, the left ventricle, relaxes, so that the blood is transferred to it. When the muscular left ventricle contracts in its turn, the blood is pumped out to the body. De-oxygenated blood comes from the body to the upper chamber on the right, the right atrium, as it relaxes. As the right atrium contracts, the corresponding lower chamber.

14. **(d)**

15. **(a)** Fertilisation does not lead to clone formation.

16. **(d)** Homozygous red flower RR and homozygous white flower . When it is crossed it will form pink flower.

17. **(d)** A reducing agent is a substance which oxidises itself but reduces others *i.e.,* looses electrons.

18. **(c)** Magnetic field inside a long solenoid is uniform. This magnetic field magnetises the iron bar.

19. **(a)** Cerebrum is the largest part of the brain and is composed of right and left hemispheres. It performs higher functions like interpreting touch, vision and hearing, as well as speech, reasoning, emotions, learning and fine control of movement. It is responsible for intelligence, memory and judgement.

20. **(a)** Both Assertion and Reason are correct and the Reason is a correct explanation of Assertion.
Mendel used a number of contrasting visible characters of garden peas, produced progeny from them, calculated the percentage of tall or short progeny. He was the first person to make use of his knowledge of science and mathematics and keep a count of individuals exhibiting a particular trait in each generation. This helped him to arrive at the laws of inheritance/heredity.

21. Combustion reaction: It is a reaction between a substance and oxygen with releasing energy in the form of heat or light.

$$C + O_2 \xrightarrow{\text{heat}} CO_2 + \text{heat}$$ (2 marks)

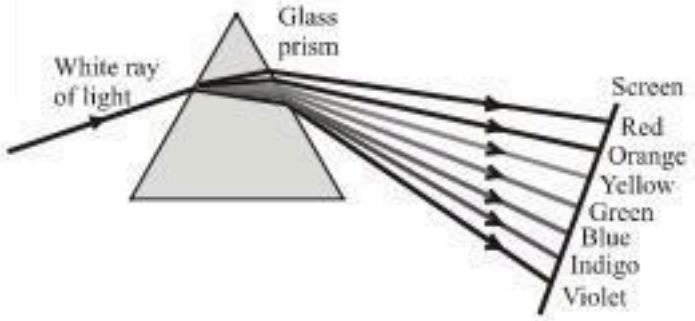
OR

When milk changes into curd there occures a decrease in pH. It happens because of the fact that lactose (a carbohydrate) present in milk gets converted into lactic acid (an acid). As more of acid is formed, the pH of medium decreases (i.e., it becomes more acidic) (2 marks)

22. Cerebrospinal fluid (CSF) is a clear colourless bodily fluid produced in the choroid plexus of the brain. It acts as a cushion or buffer for the cortex, providing a basic mechanical and immunological protection to the brain inside the skull and serves a vital function in cerebral autoregulation of cerebral blood flow. (2 marks)

23. Gonads are primary sex organs. Male gonads is testes and female gonad is ovary. (1 + 1 marks)

24. The angle between the extended incident ray and the emergent ray is called the angle of deviation. (1 mark)
This is because the different colours travel through a glass prism at different speeds. (1 mark)



OR

There is nearly no atmosphere for the astronauts as they are flying high in sky. So there is no scattering of light. This is why the sky appear dark to the astronauts. (2 marks)

25. The loss of energy at each step is so great that very little usable energy remains after four trophic levels. (2 marks)

26. No, because mothers have a pair of X-chromosomes. All children will inherit an 'X' chromosome from their mother regardless of whether they are boys or girls. (2 marks)

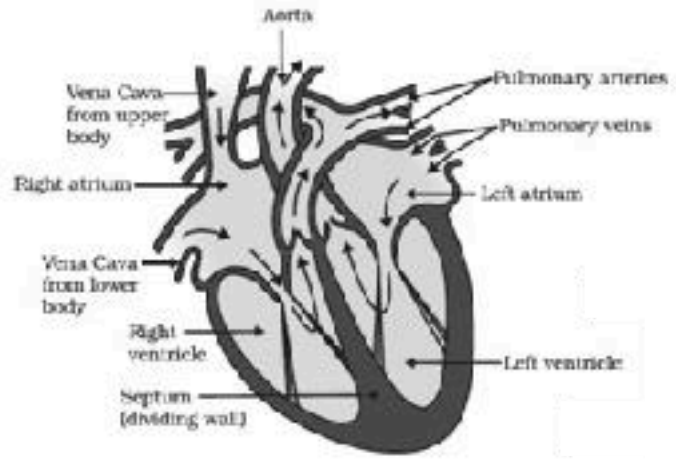
27. Aqua-regia is a freshly prepared mixture of 1 part of concentrated nitric acid and 3 parts of concentrated hydrochloric acid. (1 mark)
Properties:
(i) It is highly corrosive (1 mark)
(ii) Aqua-ragia can dissolve all metals. (1 mark)

28. Petroleum was formed by slow decomposition of sea plants and animals. These plants and animals were buried under the Earth's crust millions of years ago. They got covered by layers of sedimentary rocks which cut off the supply of air. In the absence of air, these fossils undergo

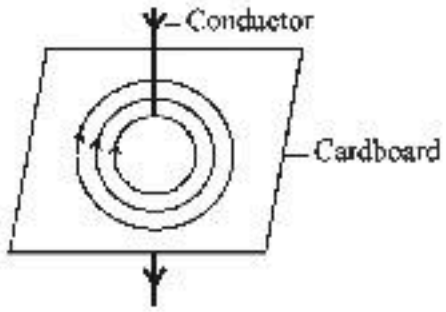
a slow chemical change due to high temperature and pressure and then turned into new form, known as petroleum. It is also known as crude oil. (3 marks)

29. The earth wire is connected to a metallic plate deep inside the earth. which provides a low resistance conducting path for the current. In this way, the metallic body of appliance is connected to the earth, Hence, any leakage of current to the meetallic body of appliance keeps the potential to that of earth i.e. the earth wire allows the current to flow into the earth The user might not get a severe electric shock on touching such an appliance. Earth wire has green insulation, so it can be identified. (3 marks)

30. The valves (*i.e.* bicuspid and tricuspid) are present between auricles and ventricles. Their presence stops the back flow of blood. When ventricles contract, the valves get closed and it helps to maintain the unidirectional flow of blood. (*i.e.*the blood does not go back into auricles). (2+1 marks)



31. Figure shows the setting of the iron filings.



(1 mark)

(i) The shape of distribution of iron filings remains unchanged but they get arranged upto a larger distance from the conductor when the strength of current is increased. This is because on increasing the strength of current, the strength of the magnetic field is increased and it is effective upto a larger distance from the conductor. (1 mark)

(ii) Magnetic field strength is increased so the iron filings get arranged upto a larger distance. (1 mark)

32. It will bend towards the normal because the velocity of light decreases as it enters into water. Here, air is a rarer medium and water is denser medium.So, light ray will bend towards normal. (3 marks)

OR

(i) Converging

(ii) Simple microscope and telescope (½ mark)

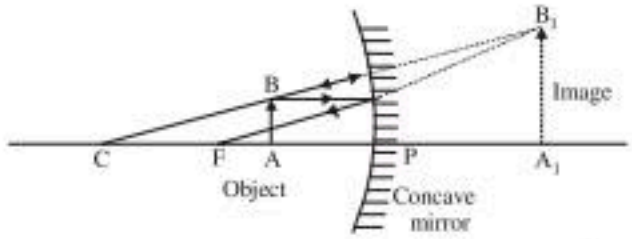
(iii) In this case,

(a) Reflected rays are divergent , therefore image A_1B_1 is formed behind the mirror.

(b) Image is virtual and erect.

(c) Size of image A_1B_1 is larger than object AB. (see the fig.)

(1½ marks)



(1 mark)

33. Energy present in Grass = 20000 J

Justification : According to the ten percent law of energy in a food chain, only ten % of energy is transferred to the next trophic level. Thus, the energy keeps on decreasing by 10% of each level.

Explanation:

Energy available to grass = 20000 J

Energy available to grass hopper

= 10% of 20000 = 2000 J

Energy available to frog = 10% of 2000 = 200 J

Energy available to snake = 10% of 200 = 20 J

Energy available to peacock = 10% of 20 = 2 J

hence, justified. (3 marks)

34. (a) $\underset{\text{Iron(III)oxide}}{Fe_2O_3(s)} + \underset{\text{Aluminium}}{2Al(s)} \longrightarrow \underset{\text{Aluminium oxide}}{Al_2O_3(s)} + \underset{\text{Iron}}{2Fe(s)}$

(b) $\underset{\text{Silver nitrate}}{AgNO_3(aq)} + \underset{\text{Sodium chloride}}{NaCl(aq)} \longrightarrow \underset{\text{Silver chloride}}{AgCl(s)} + \underset{\text{Sodium nitrate}}{NaNO_3(aq)}$

(c) $\underset{\text{Chlorine}}{Cl_2(g)} + \underset{\text{Potassium iodide}}{2KI(aq)} \longrightarrow \underset{\text{Potassium chloride}}{2KCl(aq)} + \underset{\text{Iodine}}{I_2(s)}$

(d) $\underset{\text{Copper oxide}}{CuO(s)} + \underset{\text{Magnesium}}{Mg(s)} \longrightarrow \underset{\text{Magnesium oxide}}{MgO(s)} + \underset{\text{Copper}}{Cu(s)}$

(e) $\underset{\text{Copper}}{Cu(s)} + 2\underset{\text{Silver nitrate}}{AgNO_3(aq)} \longrightarrow \underset{\text{Copper nitrate}}{Cu(NO_3)_2(aq)} + \underset{\text{Silver}}{2Ag(s)}$

(1× 5 = 5 marks)

OR

(a) $Si_2H_6 + 8H_2O \longrightarrow 2Si(OH)_4 + 7H_2$

(b) $C_2H_6 + Cl_2 \longrightarrow C_2H_5Cl + HCl$

(c) $B_4H_{10} + \frac{11}{2}O_2 \longrightarrow 2B_2O_3 + 5H_2O$

(d) $3H_2 + N_2 \longrightarrow 2NH_3$

(e) $CS_2 + 3O_2 \longrightarrow CO_2 + 2SO_2$

(f) $N_2O_5 \longrightarrow N_2O_4 + \frac{1}{2}O_2$

(g) $KNO_3 \longrightarrow KNO_2 + \frac{1}{2}O_2$

(h) $NH_4NO_3 \longrightarrow N_2O + 2H_2O$

(i) $NH_4NO_2 \longrightarrow N_2 + 2H_2O$

(j) $2NaHCO_3 \longrightarrow Na_2CO_3 + H_2O + CO_2$

(½ × 10 = 5 marks)

35. (a) (i) Bifocal lenses are used to correct the defect when a person suffers from both the defects of vision myopia and hypermetropia. (1 mark)

(ii) Bifocal lens is made by using two lenses in one eyepiece. Convex lens of appropriate focal length is positioned below while concave lens of appropriate focal length is positioned above. (1 mark)

(b) We know that, Power of lens(P) = 1/f

Or, f = 1/P (1 mark)

So, focal length (f) of lens for near vision

= 1/3 = +0.33m (1 mark)

And focal length of lens for distant vision

= – 1/3 = – 0.33m. (1 mark)

36. (a) Hormones are the chemical substances which coordinate and control the activities of living organisms and also their growth. The term hormone was introduced by Bayliss and Starling. (1 mark)

(b) **Characteristics of Hormones.** (Any four)

(i) Hormones are the secretions of endocrine glands or tissues.

(ii) They are poured directly into the blood and carried throughout the body by blood circulatory system.

(iii) Hormones have their effect at the sites different from the sites where they are made. So, they are also called 'chemical messengers.'

(iv) They act on specific tissues or organs called 'target organs.'

(v) They coordinate the activities of the body and also its growth.

(vi) They are secreted in extremely minute quantities.

(vii) Chemically, hormones may be polypeptides and proteins, amino acids and their derivatives or steroids.

(viii) Hormones help the body to cope with emergency demands such as infection, trauma, dehydration, starvation, haemorrhage and extreme temperature.

(ix) They generally slow in their actions.

(4×½ = 2 marks)

(c) The hormone required for the following are as follows:

(i) Functioning of mammary glands – Prolactin.

(ii) Regulation of calcium and phosphate in blood– Calcitonin.

(iii) Lowering of blood glucose – Insulin.

(iv) Development of moustache and beard in human male – Testosterone. (4×½ = 2 marks)

37. (a) Raw materials for preparing $NaHCO_3$:

$NaCl, H_2O, CO_2, NH_3$ (1 mark)

$CaCl + H_2O + CO_2 + NH_3 \longrightarrow NaHCO_3 + NH_4Cl$ (1 mark)

(b) The compounds used as antacids — $NaHCO_3$, $Ca(OH)_2$, $Mg(OH)_2$, cimetidine; all are mild basic in nature.

But NaOH cannot be used as it is corrosive in nature. (2 marks)

OR

(b) Backing powder mainly contain, sodium bicarbonate and a weak acid, generally tartaric acid. It is used to increase the volume of bakery products such as cakes. (2 marks)

38. (i) It is because yellow colour is dominant over green colour.

(ii) The work of mendel was more quantitative.

(iii) All the offspring will be tall.

(iv) Option A is correct.

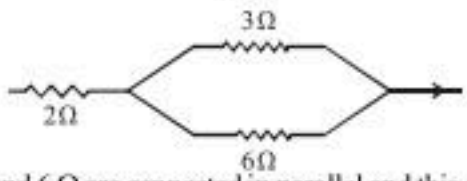
39. (a) (i) In series (ii) In parallel. (1 mark)

(b) Because it is safer as the current in it is smaller. Also large number of electric bulbs connected in series can be controlled with just one switch. (1 mark)

(c) The equivalent resistance of resistors connected in parallel is less than even the smallest resistance connected in parallel, so, large current is obtained in the circuit for the same potential difference. So resistances are connecting in parallel. (2 marks)

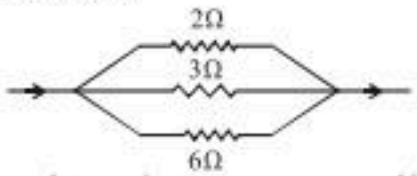
OR

(a)



3 Ω and 6 Ω are connected in parallel and this combination is connected in series to 2 Ω resistor to get an equivalent resistance of 4Ω. (1 mark)

(b)



All these three resistances are connected in parallel to get an equivalent resistance of 1 Ω. (1 mark)