

CLASS X : SAMPLE QUESTION PAPER - 1

SUBJECT: SCIENCE (086)

Time Allowed: 3 Hours

Maximum Marks: 80

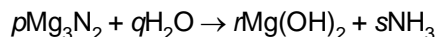
General instructions:

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 16 simple/complex MCQs and 04 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each.
7. Section E consists of 3 source-based/case-based/ passage - based / integrated units of assessment of 04 marks each with sub-parts of the values of 1/2/3 marks.

SECTION – A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 16.

1. Consider the following reaction :



When the equation is balanced, their coefficients p, q, r, s respectively are

- (a) 1, 3, 3, 2 (b) 1, 6, 3, 2 (c) 1, 2, 3, 2 (d) 2, 3, 6, 2
2. Match list - I with list - II and select the correct option :

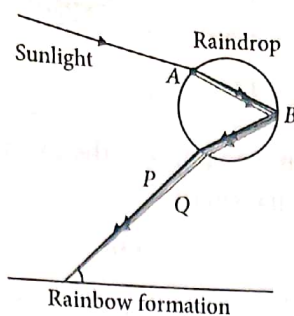
List-I		List-II	
(P)	Good conductor of heat and electricity	1	Solid NaCl
(Q)	Soluble in water	2	S
(R)	Poor conductor of electricity	3	Cu
(S)	Yellow flame	4	Na

- (a) P - 3, Q - 2, R - 4, S - 1 (b) P - 4, Q - 2, R - 3, S - 1
- (c) P - 3, Q - 1, R - 2, S - 4 (d) P - 1, Q - 3, R - 2, S - 4
3. With the reference to four gases $\text{CO}_2, \text{CO}, \text{Cl}_2$ and O_2 , which one of the options in the table is correct?

	Acidic oxide	Used in treatment of water	Product of respiration	Production of incomplete combustion
(a)	CO	Cl_2	O_2	CO
(b)	CO_2	Cl_2	CO_2	CO
(c)	CO_2	O_2	O_2	CO_2
(d)	CO	O_2	CO_2	CO_2

4. A student was given four unknown colourless samples labelled A, B, C and D and asked to test their pH using pH paper. He observed that the colour of pH paper turned to light green, dark red, light orange and dark blue with samples A, B, C and D respectively. The correct sequence of increasing order of the pH value of samples is
 (a) $A < B < C < D$ (b) $A < D < C < B$ (c) $C < B < A < D$ (d) $B < C < A < D$
5. When solid mercury(II) oxide is heated, liquid mercury and oxygen gas are produced. Which of the following statements is true regarding the balanced chemical equation for this process?
 (a) 1 mole of mercury(II) oxide produces two moles of mercury and one mole of oxygen gas.
 (b) 2 moles of mercury(II) oxide produce one mole of mercury and one mole of oxygen gas.
 (c) 1 mole of mercury(II) oxide produces half mole of mercury and half mole of oxygen gas.
 (d) 2 moles of mercury(II) oxide produce 2 moles of mercury and one mole of oxygen gas.
6. By completing the reaction, identify X and Y.
 $\text{Al}_2\text{O}_3 + 2\text{NaOH} \longrightarrow X + Y$
 (a) $X = 2\text{NaAlO}_2, Y = \text{H}_2\text{O}$ (b) $X = \text{O}_2, Y = \text{H}_2\text{O}$
 (c) $X = 2\text{NaAlO}_2, Y = \text{O}_2$ (d) $X = \text{Na}_2\text{CO}_3, Y = \text{H}_2\text{O}$
7. $\text{Zn} + \text{CuSO}_4 \longrightarrow \text{ZnSO}_4 + \text{Cu}$
 The given reaction is a type of
 (a) combination reaction (b) displacement reaction
 (c) combustion reaction (d) decomposition reaction.
8. Water and mineral needed by the plants are absorbed by the roots. Which of the following statements is true about the uptake of water in plants?
 (a) It occurs all the time due to diffusion.
 (b) Water enters the roots due to osmosis.
 (c) At night when transpiration is low, roots do not take up water.
 (d) The movement of water from roots to leaves is bidirectional.
9. Out of the given statements identify the incorrect one.
 (a) Alimentary canal exhibits peristaltic movements all along the gut.
 (b) The digestion in stomach is facilitated by gastric gland secretions.
 (c) The hydrochloric acid creates an alkaline medium which facilitates the action of enzyme pepsin.
 (d) Stomach expands when the food enters into it.
10. In a person the tubule part of the nephron is not functioning at all. What will be its effect on urine formation?
 (a) The urine will not be formed.
 (b) Quality and quantity of urine will remain unaffected.
 (c) Urine is more concentrated.
 (d) Urine will be more diluted.
11. If in a person medulla gets dysfunctional, then which of the following is affected?
 (a) Thinking (b) Walking
 (c) Feeling of hunger and thirst (d) Vomiting
12. Which of the following is not an advantage of vegetative propagation?
 (a) Plants which produce non viable seeds can be grown.
 (b) It is a casier method than sowing seeds.
 (c) Such plants produce seeds and fruits much earlier than plants produced from other methods.
 (d) It is the best method to introduce new genetic traits in the species.
13. A concave lens of focal length f forms an image which is n times the size of the object. The distance of the object from the lens is
 (a) $(1 - n)f$ (b) $(1 + n)f$ (c) $\left(\frac{1+n}{n}\right)f$ (d) $\left(\frac{1-n}{n}\right)f$

14. Choose the correct option for the identification of the natural phenomenon at point A and B and colour of the rays P and Q.



	Natural phenomenon at A	Natural phenomenon at B	Colour of Ray P	Colour of Ray Q
(a)	Internal reflection	Dispersion	Blue	Red
(b)	Dispersion	Refraction	Yellow	Blue
(c)	Dispersion	Internal reflection	Red	Violet
(d)	Internal reflection	Dispersion	Violet	Yellow

15. Plastic polythenes should not be used because
- they are made of non-biodegradable materials
 - they are made of biodegradable materials
 - they spoil the food kept in them
 - they are made of materials with light weight.
16. Which among the following animals cannot be kept at same trophic level?
- Rabbit
 - Cow
 - Lion
 - Squirrel

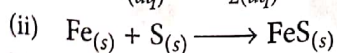
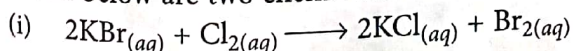
Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

- Both A and R are true, and R is the correct explanation of A.
 - Both A and R are true, and R is not the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.
17. Assertion (A) : Acetic acid does not acts as an acid in benzene solution.
Reason (R) : Benzene does not accept proton.
18. Assertion (A): In humans, chromosomes of father determines the sex of child.
Reason (R): In humans, father is heterogametic.
19. Assertion (A): Chemical pesticides are found maximum at the highest trophic level of food chain.
Reason (R): Biomagnification occurs as a result of accumulation of chemicals in the water bodies.
20. Assertion (A) : For observing traffic at our back, we prefer to use a convex mirror.
Reason (R) : A convex mirror has a much larger field of view than a plane mirror or a concave mirror.

SECTION - B

Question No. 21 to 26 are very short answer questions.

21. Given below are two chemical reactions :



Which is combination reaction and which is displacement? Give explanation also.

22. Differentiate between enzyme trypsin and enzyme pepsin on the basis of the following features:

S.NO.	Feature	Trypsin	Pepsin
1.	Secreted by organ		
2.	Function		

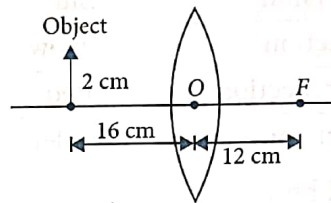
23. A. Write the correct pathway of air into lungs in the form of a flowchart. Name the structure present in trachea that prevents it from collapsing.

OR

B. State one role for each of the following in digestive system :

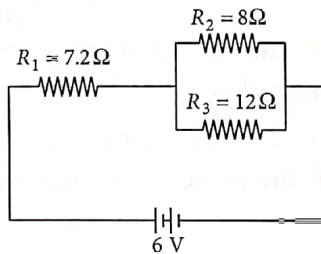
- (i) HCl (ii) Lipase (iii) Mucus (iv) Salivary amylase

24. In the given figure, a 2 cm high object is placed at a distance of 16 cm from a convex lens. The focal length of the lens is 12 cm. Find the



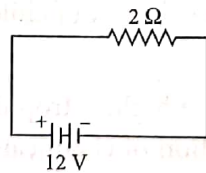
- A. position of the image
 B. size of the image
 C. nature of the image.

25. A. In the circuit diagram given below, find:
 (i) Total resistance of the circuit.
 (ii) Total current (I) flowing in the circuit.

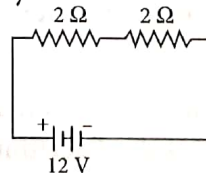


OR

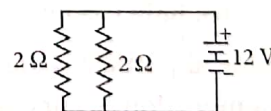
B. In the following circuits, find the minimum and maximum heat produced in the resistor or combination of resistors connected to a 12 V battery.



(i)



(ii)



(iii)

26. The pictures given below show the material we use in our daily lives.



What impact will this material have on environment? Explain.

SECTION - C

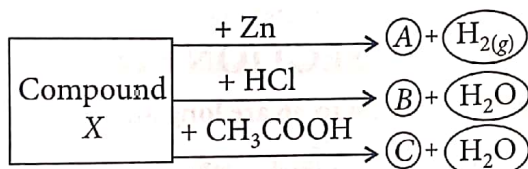
Question No. 27 to 33 are short answer questions.

27. A. Anup added dilute hydrochloric acid to four metals and recorded her observations as shown in the table given below:

Metal	Gas Evolved
Copper	Yes
Iron	Yes
Magnesium	No
Zinc	Yes

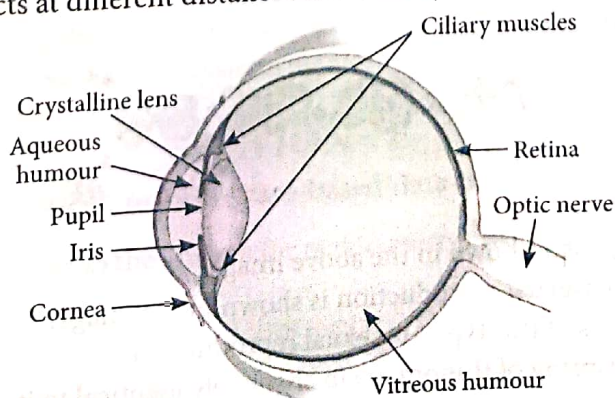
Write the correct observations and give chemical equations of the reaction involved.

- B. A clear solution of slaked lime is made by dissolving Ca(OH)_2 in an excess of water. This solution is left exposed to air. The solution slowly goes milky as a faint white precipitate forms. Explain why a faint white precipitate forms, support your response with the help of a chemical equation.
28. A. Identify the compound X on the basis of the reactions given below. Also, write the name and chemical formulae of A, B and C.

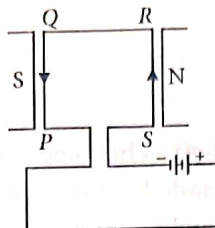


OR

- B. Complete the following reactions :
- (a) $\text{CaCO}_3 + \text{H}_2\text{O} + \text{CO}_2 \longrightarrow$
- (b) $\text{Na}_2\text{CO}_3 + 2\text{HCl} \longrightarrow$
- (c) $\text{Ca(OH)}_2 + \text{Cl}_2 \longrightarrow$
29. In the human body the site of absorption of digested food is the small intestine. How is the process of absorption carried out and why is absorption of digested food necessary?
30. A. In humans, allele for brown eyes (B) is dominant over that of blue eyes (b). If a brown eyed women (BB) marries a blue eyed man (bb), then calculate the ratio of genetic makeup of F_2 generation with the help of suitable cross.
- B. What would be the ratio of brown eyed and blue eyed offspring if mother is heterozygous for brown eyes and father has blue eyes.
31. A. Rahul has normal vision, but he cannot distinguish between blue-yellow colours. What could be the possible reason?
- B. In a human eye, the distance between the retina and the eye lens is fixed yet people are able to see the images of various objects at different distances from the eye ?



- (i) How does the human eye manage this?
 (ii) Which type of lens human eye have?
 (iii) What happens when eye muscles contracts?
32. A. An electric iron draws a current of 0.5 A when voltage is 200 V. Calculate the amount of charge flowing through it in one hour.
 B. Differentiate between electrical resistance and resistivity of a conductor.
33. A rectangular coil PQRS is placed between the pole pieces of a horse-shoe magnet as shown in figure.



- A. In which of the arms magnetic field will be parallel ?
 B. What will happen to the coil?
 C. How is the effect of force on the coil changed if the terminals of the battery are interchanged?

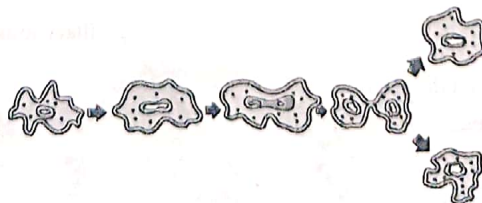
SECTION - D

Question No. 34 to 36 are long answer questions.

34. A. (i) People use a variety of methods to wash clothes. Usually after adding the soap, they beat the clothes on a stone or beat it with a paddle, scrub with a brush or the mixture is agitated in a washing machine. Why is agitation necessary to get clean clothes?
 (ii) You have three unlabelled test tubes containing ethanol, ethanoic acid and soap solution. Explain the method you would use to identify the compounds in different test tubes by chemical tests using litmus paper and sodium metal.
 (iii) Draw the structure of cyclohexane.

OR

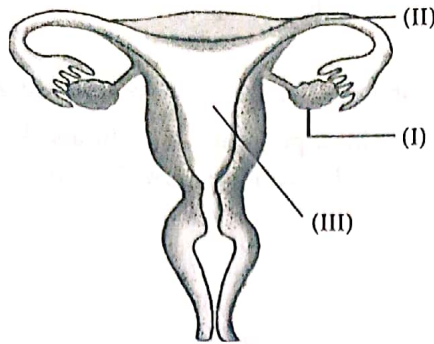
- B. (i) In esterification reaction, there is a reversible sign used in the reaction. How the reverse reaction can be obtained and what are the products formed?
 (ii) Let 'A' be the 1st member of a homologous series having molecular formula C_6H_{14} . Write the molecular formula of the third member of this series. What is the molecular mass of this compound?
 (iii) Why is ethanol regarded as a cleaner fuel?
35. A. The image below shows an organism giving rise to its offspring. In this mode of asexual reproduction, the cell of parent divides into two daughter cells which then grow into adult organisms.



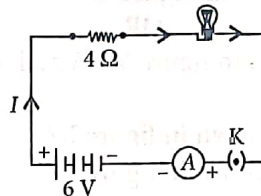
- (i) Name the organism shown in the above image.
 (ii) Which type of asexual reproduction is shown in the image?
 (iii) List two features of this type of asexual reproduction.
 (iv) Why is the offspring of this organism absolutely identical to its parent?

OR

- B. The image below shows female reproductive system. Ovary is the primary sex organ responsible for releasing female gamete.



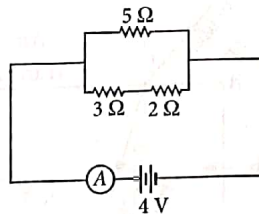
- How many female gamete(s) is/are released every month by part (I) shown in the image?
 - What will happen if the female gamete released by part labelled as (I) does not get fertilised by male gamete?
 - In which part does the fusion of male and female gamete take place? What happens after fusion of gametes?
 - In which part of the given figure, implantation of the fertilised egg takes place?
36. A. An electric lamp of resistance $20\ \Omega$ and resistance of $4\ \Omega$ are connected to a $6\ \text{V}$ battery as shown in the circuit. Calculate.



- the total resistance of the circuit
- the current through the circuit,
- the potential difference across the electric lamp

OR

- B. In the circuit diagram, find

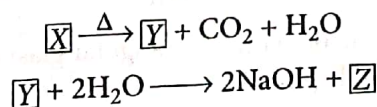


- total resistance.
- current shown by ammeter A.
- potential difference across $3\ \Omega$ and $5\ \Omega$ resistances.
- potential difference across $2\ \Omega$ resistance.

SECTION - E

Question No. 37 to 39 are case-based/data-based questions.

37. X is a compound commonly used in the kitchen for making tasty crispy *pakor*s, etc. Some times it is added for faster cooking.



A. Identify the compounds X, Y and Z and complete the given reactions.

Attempt either subpart B or C.

B. What is the nature of the solution formed by dissolving Y in water?

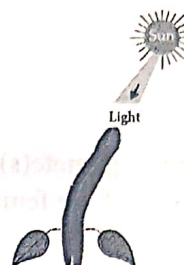
OR

C. Predict whether Y is basic or acidic in nature. Give one use of it.

38. Aisha observed the growth of a plant in response to light. She also knows about the movement of body organs such as hands or legs in humans. But she wonders how these movements are different from each other.



X-Movement of legs in human



Y-Movement of plant in response to light

In order to help her understand the difference between movements in humans and plants, answer the following questions.

Attempt either subpart A or B.

A. Compare the movement in figure X with figure Y.

OR

B. What controls the movement shown in figure Y? Which part of human brain controls the movement shown in figure X?

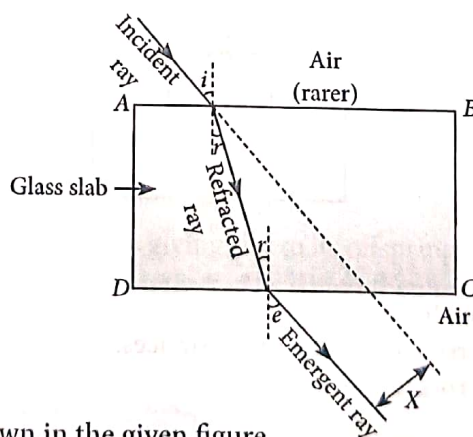
C. What brings about the movement shown in figure X?

D. What brings about the movement shown in figure Y?

39. When a light ray enters in a glass slab, then the emergent ray is parallel to the incident ray but it is shifted sideward slightly.

In this case, refraction takes place twice, first when ray enters glass slab from air and second when light ray exits from glass slab to air.

The extent of bending of the ray of light at opposite parallel faces AB and CD of rectangular glass slab is equal and opposite.



A. Identify and define X shown in the given figure.

B. State the factors on which X depends.

Attempt either subpart C or D.

C. If i is the angle of incidence and r is the angle of refraction, then $\frac{\sin i}{\sin r} = \text{constant}$.

OR

D. How should a ray of light be incident on a rectangular glass slab so that it comes out from the opposite side of the slab without being displaced?