



CLASS: X
DATE: 21/05/2024

MAX. MARKS: 20
TIME: 40 MINUTES

General Instructions:

- This question paper consists of 9 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. Student is expected to attempt only one of these questions.
- Section A** consists of four objective type questions carrying 1 mark each.
- Section B** consists of two very short answer type questions carrying 02 marks each.
- Section C** consists of one short answer type question carrying 03 marks.
- Section D** consists of one descriptive type question carrying 05 marks.
- Section E** consists of one case-based question carrying 04 marks with sub-parts.

SECTION – A

Select and write the most appropriate option out of the four options given for each of the questions 1 to 4

Q.No	Questions	Marks
1	For a convex mirror the image distance (v) = 5cm, focal length (f) = 10cm and height of the image (h') = 1.2 cm. The correct representation according to the New Cartesian Sign Convention: (a) $v = -5$ cm, $f = -10$ cm and $h' = -1.2$ cm (b) $v = -5$ cm, $f = +10$ cm and $h' = -1.2$ cm (c) $v = +5$ cm, $f = -10$ cm and $h' = +1.2$ cm (d) $v = +5$ cm, $f = +10$ cm and $h' = +1.2$ cm	1
2	The compound used on the photographic and x-ray film is: (a) AgNO_3 (b) AgBr (c) Ag_2S (d) Ag_2O	1

Q. no 3 and 4 are Assertion - Reasoning based questions.

These consist of two statements – Assertion (A) and Reason (R). Answer these questions 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

3	Assertion (A): Both proteins and fats are digested in the small intestine of man. Reason(R) : Pancreatic juice contains pepsin and lipase.	1
4	Assertion (A): Burning of Natural gas is an endothermic process. Reason (R) : Methane gas combines with oxygen to produce carbon dioxide and water.	1

SECTION – B

5	Give reason for the following: (a) Lungs do not collapse even after forceful expiration. (b) The energy released during fermentation is very less.	2
6	(a) Balance the following chemical equation: $\text{AlBr}_3 + \text{K}_2\text{SO}_4 \rightarrow \text{KBr} + \text{Al}_2(\text{SO}_4)_3$ (b) Identify the agents in the following reactions : (i) $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$ (reducing agent) (ii) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ (oxidising agent)	2

SECTION – C

7	(a) A student took sodium sulphate solution in a test tube and added barium chloride solution to it. He observed that an insoluble substance had formed. Mention the name and colour of the substance formed. (b) 2g of silver chloride is taken in a china dish and it is placed in sunlight for some time. (i) Write the balanced chemical equation for the above reaction. (ii) Identify the type of chemical reaction.	3
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SECTION-D

8	A student wants to project the image of a candle flame on a screen 48 cm in front of a mirror by keeping the flame at a distance of 12 cm from its pole. (a) Suggest the type of mirror he should use. (b) Find the magnification of the image produced. (c) How far is the image from its object? (d) Draw a ray diagram to show the image formation in this case.	5
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SECTION – E

9	<p>The table below shows the composition of inhaled and exhaled air</p> <table border="1" style="margin-left: auto; margin-right: auto;"><thead><tr><th style="text-align: center;">Gas</th><th style="text-align: center;">Inhaled air</th><th style="text-align: center;">Exhaled air</th></tr></thead><tbody><tr><td style="text-align: center;">Oxygen</td><td style="text-align: center;">20.84%</td><td style="text-align: center;">15.7%</td></tr><tr><td style="text-align: center;">Carbon dioxide</td><td style="text-align: center;">0.04%</td><td style="text-align: center;">3.6%</td></tr></tbody></table> <p>(a) Why does the exhaled air contain more carbon dioxide than the inhaled air? (b) How is carbon dioxide transported in our body? (c) Briefly explain how diaphragm helps in the process of breathing.</p> <p style="text-align: center;">OR</p> <p>(c) Why does diffusion of gases occur only in the alveolar region and not in other parts of the respiratory system?</p>	Gas	Inhaled air	Exhaled air	Oxygen	20.84%	15.7%	Carbon dioxide	0.04%	3.6%	4
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SECTION – A		
Select and write one most appropriate option out of the four options given for each of the questions 1 to 4		
Q.No	Questions	Marks
1	An object is placed in front of a convex mirror at infinity. According to the New Cartesian Sign Convention, the sign of focal length and the sign of the image distance in this case are respectively: (a) +,- (b) -, + (c) -, - (d) +, +	1
2	The following reaction is used for the preparation of oxygen gas in the laboratory $2\text{KClO}_3(\text{s}) \xrightarrow[\text{Catalyst}]{\text{Heat}} 2\text{KCl}(\text{s}) + 3\text{O}_2(\text{g})$ Which of the following statement is correct about the reaction? (a) It is a decomposition reaction and endothermic in nature. (b) It is a combination reaction. (c) It is a decomposition reaction and accompanied by release of heat. (d) It is a photochemical decomposition reaction and exothermic in nature.	1
Q. no 5 and 6 are Assertion - Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option from 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		
3	Assertion (A): Anaerobic respiration is more efficient in terms of energy release than aerobic Respiration. Reason(R) : Conversion of glucose to pyruvate takes place in the cell cytoplasm.	1
4	Assertion (A): Magnesium ribbon keeps on burning in atmosphere of oxygen. Reason (R) : Magnesium reacts with oxygen to form magnesium oxide and this reaction is combination reaction.	1

SECTION – B

5	Give reason for the following: (a) At night, CO ₂ elimination is the major exchange activity going on in plants whereas during the day, oxygen release is the major event. (b) Maximum absorption of nutrients occurs through small intestine.	2
6	(a) Balance the following chemical equation: $\text{AlBr}_3 + \text{K}_2\text{SO}_4 \rightarrow \text{KBr} + \text{Al}_2(\text{SO}_4)_3$ (b) Identify the agents in the following reactions: (i) $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$ (reducing agent) (ii) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ (oxidising agent)	2

SECTION – C

7	(a) A student took sodium sulphate solution in a test tube and added barium chloride solution to it. He observed that an insoluble substance had formed. Mention the name and colour of the substance formed. (b) Name the type of chemical reaction that takes place when quicklime is added to water. Write the balanced chemical equation for the above reaction.	3
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SECTION - D

8	(a) Find the magnification of the image formed by a spherical mirror from the following data : $u = -20\text{cm}$, $f = -15\text{cm}$ (b) How far is the image from its object? (c) Draw a ray diagram to show the image formation in this case	5
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SECTION - E

9	<p>The table below shows the composition of inhaled and exhaled air</p> <table border="1"><thead><tr><th>Gas</th><th>Inhaled air</th><th>Exhaled air</th></tr></thead><tbody><tr><td>Oxygen</td><td>20.84%</td><td>15.7%</td></tr><tr><td>Carbon dioxide</td><td>0.04%</td><td>3.6%</td></tr></tbody></table> <p>(a) Why does the exhaled air contain more carbon dioxide than the inhaled air? (b) How is carbon dioxide transported in our body? (c) Briefly explain how diaphragm helps in the process of breathing.</p> <p style="text-align: center;">OR</p> <p>(c) Why does diffusion of gases occur only in the alveolar region and not in other parts of the respiratory system?</p>	Gas	Inhaled air	Exhaled air	Oxygen	20.84%	15.7%	Carbon dioxide	0.04%	3.6%	
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