

Science

Sample Question Paper 7 (Class 10) (Term – 1) (Session 2021-22)

Time: 1 hour 30 minutes

Number of Questions: 50

General Instructions

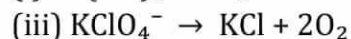
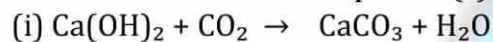
1. The Question Paper contains three sections.
2. Section A has 24 questions, Attempt any 20 questions.
3. Section B has 24 questions, Attempt any 20 questions.
4. Section C has 12 questions, Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

SECTION – A

Section - A consists of 24 questions. Attempt any 20 questions from this section.

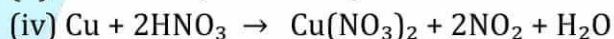
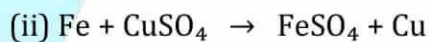
The first attempted 20 questions would be evaluated.

1. Choose the balanced equation(s) from the given:



[A] (i) & (ii) only

[C] (i), (iii) & (iv) only



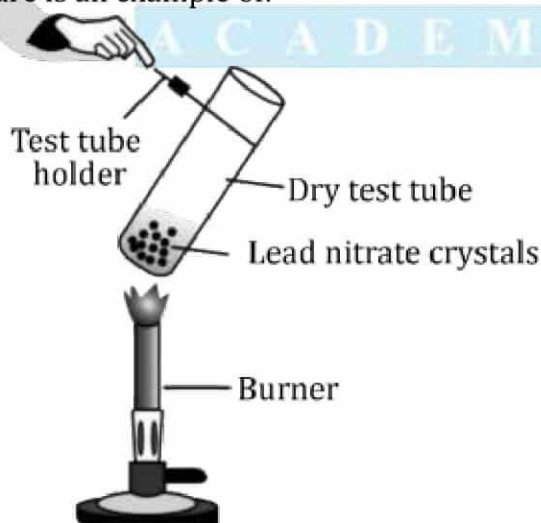
[B] (i), (ii) & (iii) only

[D] All of these

2. In a chemical reaction, the substances that take part is called **(I)** & the substance that is formed as result of chemical reaction is called **(II)**.

	Column (I)	Column (II)
[A]	Products	Reactants
[B]	Reactants	Products
[C]	Mixtures	Compounds
[D]	Reactants	Mixtures

3. The reaction in the given figure is an example of:



[A] Combination Reaction

[C] Double Decomposition Reaction

[B] Decomposition Reaction

[D] Displacement Reaction

4. Which of these equations is / are not balanced?



[A] (ii) Only

[B] (iv) Only

[C] (i) & (iii) only

[D] (i), (ii) & (iii) only

5. Identify the "X" given equation: $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + \text{"X"} + 2\text{H}_2\text{O}$

[A] Cl_2

[B] O_2

[C] $\text{Mn}(\text{OH})_2$

[D] 2Cl_2

6. Sana found an element "X", which reacts with oxygen and forms oxides of "X" which turns red litmus solution blue. The element "X" is:

[A] Non-metal

[B] Metal

[C] Mixture

[D] Alloy

7. Choose the incorrect statements:

[A] Aluminium when heated in air from aluminium oxide

[B] Sodium metals react vigorously with acid to produce sodium chloride & hydrogen gas

[C] Magnesium reacts with hot water to form magnesium hydroxide and hydrogen

[D] Copper reacts with any form of water to form metal hydroxide

8. Choose the incorrect statements about Aqua-regia?

[A] It is a mixture of 1 part of conc. Nitric acid and 3 part of conc. Hydrochloric acid

[B] It is a mixture of 1 part of Dil. Nitric acid and 3 part of conc. Sulphuric acid

[C] It can dissolve all metals

[D] It meaning in Latin Royal water.

9. There are 5 metals given: Zn, Sn, Ag, Na, Ca. Arrange the given metals from least reactive to most reactive:

[A] $\text{Sn} < \text{Na} < \text{Zn} < \text{Ca} < \text{Ag}$

[B] $\text{Ag} < \text{Zn} < \text{Sn} < \text{Na} < \text{Ca}$

[C] $\text{Ag} < \text{Sn} < \text{Zn} < \text{Ca} < \text{Na}$

[D] $\text{Zn} < \text{Sn} < \text{Ag} < \text{Ca} < \text{Na}$

10. The compound which dissolves in water to give a solution with a pH greater 7 is:

[A] Calcium Carbonate

[B] Copper (II) hydroxide

[C] Sodium hydroxide

[D] Sulphur di oxide

11. Which cell organelles contain the light – absorbing green pigment?

[A] Mitochondria

[B] Ribosomes

[C] Chloroplast

[D] Nucleus

12. Which one of the following is not present in the gastric juice secreted by stomach?

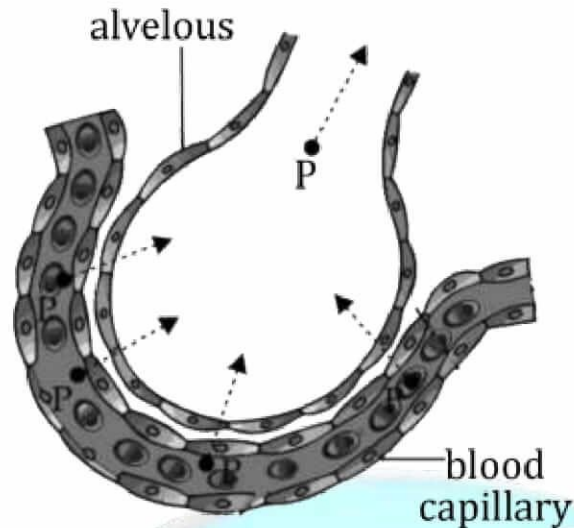
[A] Pepsin

[B] Renin

[C] Mucus

[D] Bile

13. Gas "P" diffuses from a capillary into an alveolus in the lungs. The gas "P" expelled out from the alveolus during:



- [A] Inhalation
[C] Respiration

- [B] Exhalation
[D] Inspiration

14. Based on the given information, X, Y, and Z are:

X- It transports blood to the heart.

Y- It connects the arteries and veins.

Z- It transports blood away from the heart.

	(X)	(Y)	(Z)
[A]	Capillaries	Veins	Arteries
[B]	Arteries	Veins	Capillaries
[C]	Veins	Capillaries	Arteries
[D]	Capillaries	Arteries	Veins

15. Choose the correct statement about translocation.

- [A] It is the continuous evaporation of water from the cells of a leaf.
[B] It transports food from the leaves.
[C] It binds carbon monoxide with haemoglobin.
[D] It diffuses carbon dioxide into the blood.

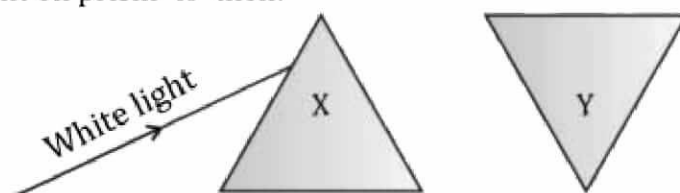
16. The correct sequence of the processes taking place in nutrition in animals is :

- [A] Ingestion, Assimilation, Digestion, Absorption, Egestion
[B] Assimilation, Absorption, Ingestion, Digestion, Egestion
[C] Ingestion, Digestion, Absorption, Assimilation, Egestion
[D] Ingestion, Digestion, Assimilation, Absorption, Egestion

17. Choose the incorrect statement.

- [A] In primary rainbow, red colour is formed on the outside and violet colour on the inside.
[B] A normal human eye cannot clearly see all the objects at the different distances.
[C] A beam of white light gives a spectrum on passing through a hollow prism.
[D] Light rays of different colour travel with the same speed in vacuum and air.

18. If white light is incident on prism "X" then:



- (I) The ray of light which emerges out of the prism "Y" will be white light.
 (II) The refraction produced by the prism "Y" is equal and opposite to that produced by prism "X".

Choose the correct statement (s).

- [A] Only (I) [B] Only (II)
 [C] Both (I) and (II) [D] None of these

19. What will be the colour of an object, which can absorb all the seven colours but does not reflect even one?

- [A] White [B] Black
 [C] Violet [D] Red

20. The path of light beam becomes visible when a fine beam of sunlight enters a smoke-filled room through a hole. It is because of:

- [A] Reflection [B] Refraction
 [C] Atmospheric Refraction [D] Scattering Effect

21. If the earth had no atmosphere, the sky would appear _____ in colour.

- [A] Colourless [B] White
 [C] Blue [D] Black

22. A red colour flower appears red because:

- [A] It absorbs red colour. [B] It allows red colour to pass through.
 [C] It absorbs and refracts red colour. [D] It reflects red colour.

23. Choose the correct option.

Column-I	Column-II
a. Tyndall effect	(i) Reflection of light
b. A microscope	(ii) Refraction of light
c. Rainbow formation	(iii) Scattering of light
d. Appearance of star position	(iv) Dispersion of light

- [A] a – (iii), b – (i), c – (iv), d – (ii) [B] a – (i), b – (iii), c – (ii), d – (iv)
 [C] a – (ii), b – (iii), c – (iv), d – (i) [D] a – (iv), b – (i), c – (iii), d – (ii)

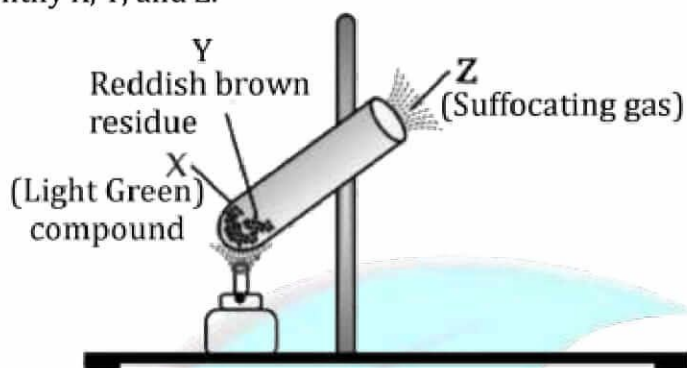
24. Given, the optical densities of four optical media P = 1.35, Q = 1.21, R = 1.58, S = 1.002 .
 The light will travel fastest in (I) because its optical density is (II).

	Column-I	Column-II
[A]	P	Highest than all
[B]	Q	More than S
[C]	R	Less than P
[D]	S	Lesser than all

SECTION - B

Section - B consists of 24 questions (Sl. No. 25 to 48). Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

25. Ram heated a small amount of light green coloured compound "X" in a test tube. He found that the compound lost some water and then gas "Z" with suffocating smell comes out. The vapours of gas are collected and dissolved in water. The solution turns blue litmus red. The residue "Y" left in the test tube turns reddish brown. Identify X, Y, and Z.



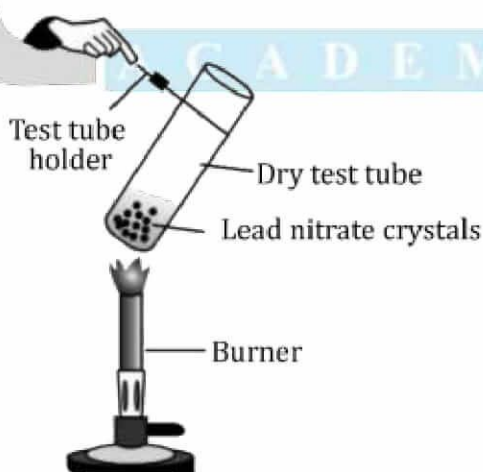
	X	Y	Z
[A]	PbSO ₄	Pb ₂ O ₃	SO ₃
[B]	FeSO ₄ ·7H ₂ O	Fe ₂ O ₃	SO ₂ , SO ₃
[C]	Na ₂ SO ₄ ·10H ₂ O	Na ₂ SO ₄	SO ₄
[D]	Pb(NO ₃) ₂	PbO ₂	NO ₂ , N ₂ O ₄

26. Choose the correct option.



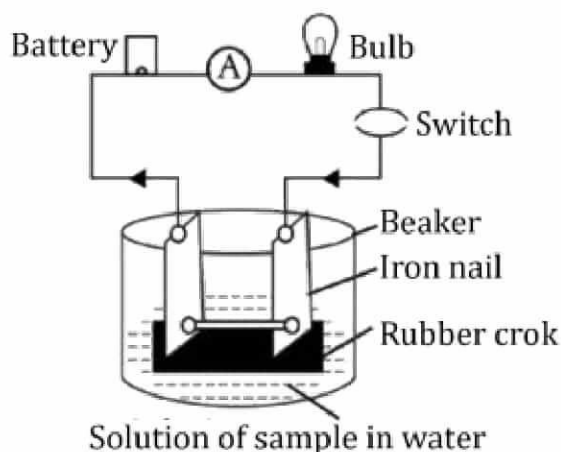
- (A) (i)- oxidation, (iii)- reduction
- (B) (ii)- reduction, (iii)- oxidation
- (C) (i)- reducing agent, (iv)- oxidizing agent
- (D) (i)- undergoes reduction (iv)-undergoes reduction.

27. Study the given experimental set-up carefully. Based on the diagram, Choose the correct observation(s)?



- [A] A double decomposition reaction takes place,
- [B] Brown fumes of NO₂ are evolved.
- [C] Red residue is left behind in the test tube.
- [D] All of these.

28. The given experimental set up is used to test a few solutions which contain hydrogen but are not categorized as acids. Which of this observation is incorrect?



- [A] When a solution of glucose is put the bulb does not glow.
- [B] When a solution of ethanol is put the bulb does not glow
- [C] When a solution of hydrochloride acid is put the bulb glows.
- [D] When a solution of sodium hydroxide is put the bulb does not glow.

29. An electrolytic cell consists of

- (i) Positively charged cathode
- (ii) Negatively charged anode
- (iii) Positively charged anode
- (iv) Negatively charged cathode.

- [A] (i) and (ii)
- [B] (i) and (iii)

- [B] (iii) and (iv)
- [D] (ii) and (iv)

30. 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

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ACADEMY

Question No. 31 to 35 consists of two segments – 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**.

31. Assertion (A): An equation is the shorthand representation of a chemical reaction.

Reason (R): A chemical reaction is a process in which a chemical substance is transformed into another chemical substance.

- [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.

32. Assertion (A): Sodium carbonate is a basic salt.

Reason (R): It is a salt of weak acid and strong base.

[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.

33. Assertion (A): The by-product of autotrophic nutrition is oxygen.

Reason (R): Oxygen is released into the atmosphere through stomata.

[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.

34. Assertion (A): A beam of white light gives a spectrum on passing through a glass prism.

Reason (R): Speed of light outside the prism is different from the speed of light inside the prism.

[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.

35 Assertion (A): Phenolphthalein gives pink colour in basic solution.

Reason (R): phenolphthalein is a natural indicator.

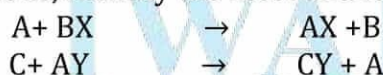
[A] Both A and R are True and R is the correct explanation of A.

[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.

36. On the basis of sequence of reactions, identify the most and least reactive elements



[A] Most reactive: C; Least reactive: B

[B] Most reactive: B; Least reactive: C

[C] Most reactive: A; Least reactive: B

[D] Most reactive: B; Least reactive: A

37. Choose the correct statement.

[A] Energy produced during respiration is stored in the form of ATP in animals.

[B] ADP has high energy content as compared to ATP.

[C] Respiration is just same as photosynthesis.

[D] All the above.

38. Which of the following chemical reactions is incorrect?

[A] Pyruvate + Oxygen (Kreb's cycle) + in mitochondria + $6\text{CO}_2 + 6\text{H}_2\text{O} + 38\text{ATP}$

[B] Pyruvate + in absence of oxygen + in yeast + 2 lactic acid + 2 ATP

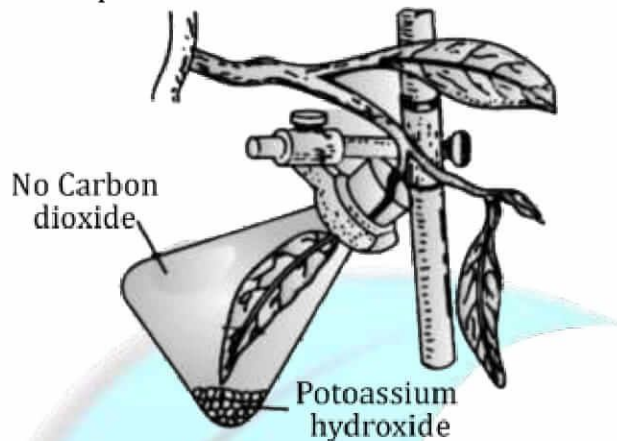
[C] Pyruvate + in absence of oxygen + yeast fermentation + $2\text{C}_2\text{H}_5\text{OH} + 2\text{CO}_2 + 2\text{ATP}$

[D] Pyruvate + in absence of oxygen + Muscles Tissue in animals + 2 lactic acid + 2 ATP

39. Which of the following take place after we exercise?

- [A] Our body needs more oxygen
- [B] Our body needs to replace the energy used
- [C] Our body needs to get rid of excess CO_2
- [D] All of these

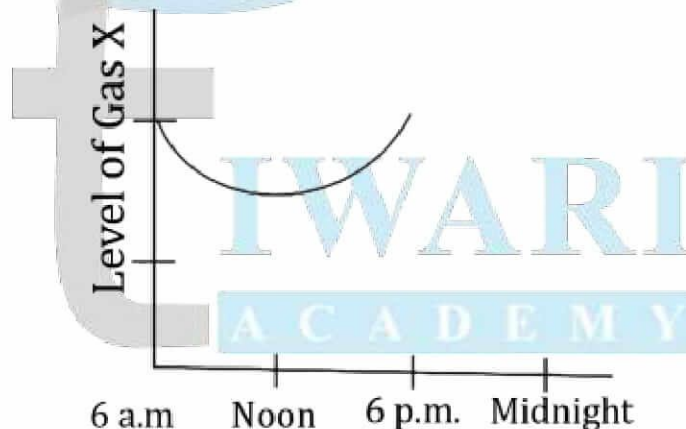
40. Study the given experimental setup:



The aim of the given experiment is to prove that _____ is essential for the process of photosynthesis.

- [A] Sunlight
- [B] Carbon dioxide
- [C] Water
- [D] Chlorophyll

41. The gas "X" in the given graph is:



- [A] Oxygen
- [B] Carbon dioxide
- [C] Nitrogen
- [D] Water vapour

42. In case of concave mirror, the image distance is _____ when image is formed in front of the mirror and _____ when the image is formed behind the mirror.

- [A] Positive, negative
- [B] Negative, negative
- [C] Negative, positive
- [D] Positive, positive

43. A negative sign in the magnification value indicates the image is:

- [A] Real and inverted
- [B] Real and erect
- [C] Virtual and erect
- [D] Virtual and inverted

44. An image formed by concave mirror is virtual, when the object is placed:

- [A] At Infinity [B] At C
[C] Between C and F [D] Between P and F

45. In which of the following the image of an object placed at Infinity will be highly diminished and point sized?

- [A] Concave mirror only
[B] Convex mirror only
[C] Convex lens only
[D] Convex mirror, concave mirror concave lens, and convex lens.

46. A student obtained a sharp image of a candle flame placed at the distant end of the laboratory table on a screen using a concave mirror to determine its focal length. The teacher suggested him to focus a distant building about 1 km far from the laboratory, for getting more correct value of the focal length. In order to focus the distant building on the same screen the student should slightly move the:

- [A] mirror away from the screen [B] screen away from the mirror
[C] screen towards the mirror [D] screen towards the building.

47. In your laboratory you trace the path of light rays through a glass slab for different values of angle of incidence (Z_i) and in each case measure the values of the corresponding angle of refraction (Z_r) and angle of emergence (Z_e). On the basis of your observation your correct conclusion is:

- [A] Z_i is more than Z_r , but nearly equal to Z_e [B] Z_i is less than Z_r , but nearly equal to Z_e
[C] Z_i is more than Z_e , but nearly equal to Z_r [D] Z_i is less than Z_e , but nearly equal to Z_r

48. You are given water, mustard oil, glycerine, and kerosene. In which of these media, a ray of light incident obliquely at some angle would bend the most.

- [A] Kerosene [B] Water
[C] Mustard oil [D] Glycerine

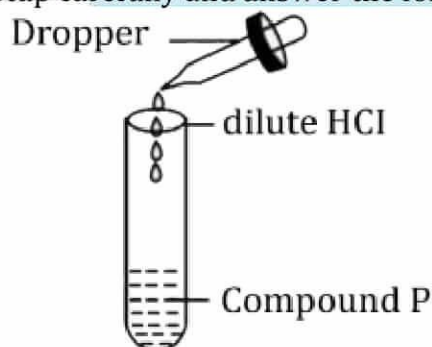
SECTION - C

Section - C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section.

The first attempted 10 questions would be evaluated.

Case - 1:

Observe the given experimental setup carefully and answer the following questions.



49. Which of the following could be the possible observation?

- [A] The solution becomes blue-green due to formation of copper
[B] The solution becomes blue-green due to formation of copper chloride.
[C] The solution becomes white due to formation of calcium hydroxide oxide.
[D] The solution becomes white due to formation of calcium oxide.

50. The balanced chemical equation of the reaction which take place is:

- [A] $\text{Cu(OH)}_2 (\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{CuCl}_2(\text{aq}) + \text{H}_2\text{O}(\text{l})$
 [B] $\text{Cu(OH)}_2 (\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{CuO}(\text{aq}) + \text{H}_2\text{O}(\text{l})$
 [C] $\text{Cu(OH)}_2 (\text{s}) + \text{HCl}(\text{aq}) \rightarrow \text{CuCl}_2 (\text{aq}) + \text{H}_2\text{O}(\text{l})$
 [D] $\text{CuO}(\text{s}) + \text{HCl}(\text{aq}) \rightarrow \text{CuCl}(\text{aq}) + \text{H}_2\text{O}(\text{l})$

51. On the basis of the above reaction, what can you say about the nature of compound "P"?

- [A] It is acidic in nature [B] It is basic in nature.
 [C] It is neutral [D] It amphoteric metal.

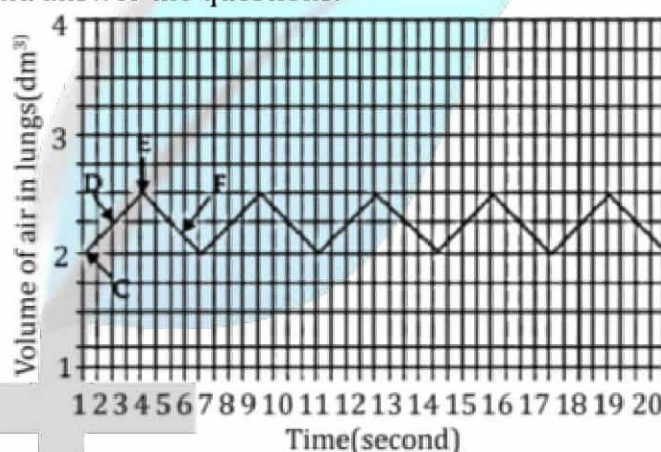
52. What you can infer from the given chemical reaction:

Hydrochloric acid + Sodium hydroxide \rightarrow Sodium chloride + Water

- [A] It is neutralization reaction [B] It is combustion reaction
 [C] It is oxidation reaction [D] None of these.

Case - 2:

The given graph shows the changes in the volume of the lungs of a person at rest over a period of 20 seconds study the graph and answer the questions.



53. How many breaths per minute is the person taking when at rest?

- [A] 5 [B] 10
 [C] 15 [D] 20

54. Which two points in the graph shows inspiration and expiration?

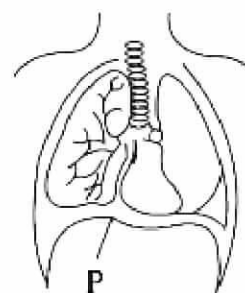
- [A] D, E [B] D, F
 [C] C, D [D] E, F

55. What causes the change in air pressure during period "D"?

- [A] Contraction of the diaphragm muscles
 [B] Decrease in the volume of the lungs
 [C] Movement of ribs downward and inward
 [D] Relaxation of the external intercostal muscles.

56. When the structure "P" contracts and flattens.

- [A] Air is forced out of the lungs.
 [B] The volume of the thoracic cavity increases
 [C] The rib cage moves downwards and inwards
 [D] The air pressure in the lungs increases.

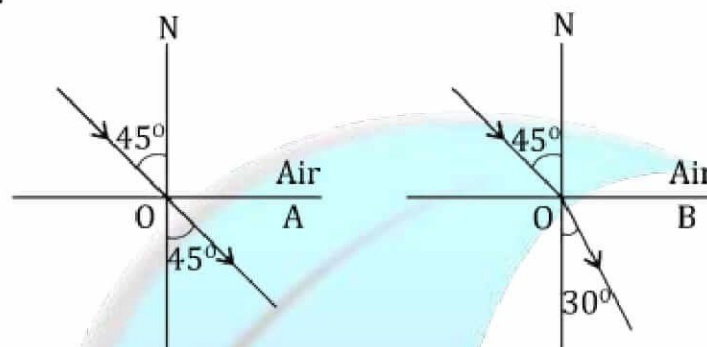


Case - 3:

Refractive index, (also called index of refraction), is the measure of the bending of a ray of light when passing from one medium into another. If "i" is the angle of incidence of a ray in vacuum (which is the angle between the incoming ray and the perpendicular to the surface of a medium, called the normal) and "r" is the angle of refraction, (which is angle between the ray in the medium and the normal), the refractive index "n" is defined as the ratio of the sine of the angle of incidence to the sine of the angle of refraction; i.e., $n = \sin i / \sin r$.

Refractive index is also equal to the velocity of light "c" of a given wavelength in empty space divided by its velocity "v" in a substance, or $n = c/v$.

In the given diagram, a ray of light as it travels from air to two different media A and B for a given angle of incidence can be seen.



57. What will happen to the angle of refraction, if angle of incidence is increased in both media?

- [A] It will increase
- [B] It will decrease
- [C] It will remain same
- [D] It will become zero in medium A.

58. If n_A and n_B are the refractive index of two media, which of these options is correct?

- [A] $n_A = n_B$
- [B] $n_A > n_B$
- [C] $n_A < n_B$
- [D] Cannot be said.

59. Choose the correct statement.

- (i) The speed of light is less in a rarer medium than a denser medium.
- (ii) The absolute refractive index of a medium is simply called its refractive index.
- (iii) A medium with larger refractive index is optically denser than a medium with smaller refractive index.
- (iv) Refraction is due to the change in speed of light as it enters from one medium to another.

- [A] (i) and (ii) only
- [B] (i), (ii) and (iii) only.
- [C] (ii), (iii) and (iv) only.
- [D] All of these

60. In an experiment, a beam of light is passed from a denser medium to a rarer medium. Based on the observation obtained, choose the correct statement.

- (i) Its velocity will increase.
 - (ii) Its frequency remains constant.
 - (iii) Its wavelength will decrease
- [A] Only (i)
 - [B] Only (ii) & (iii)
 - [C] Only (i) & (iii)
 - [D] All of these.