Science

Sample Question Paper 2
(Class 10) (Term – 1) (Session 2021-22)

Time: 1 hour 30 minutes **Number of Questions: 50**

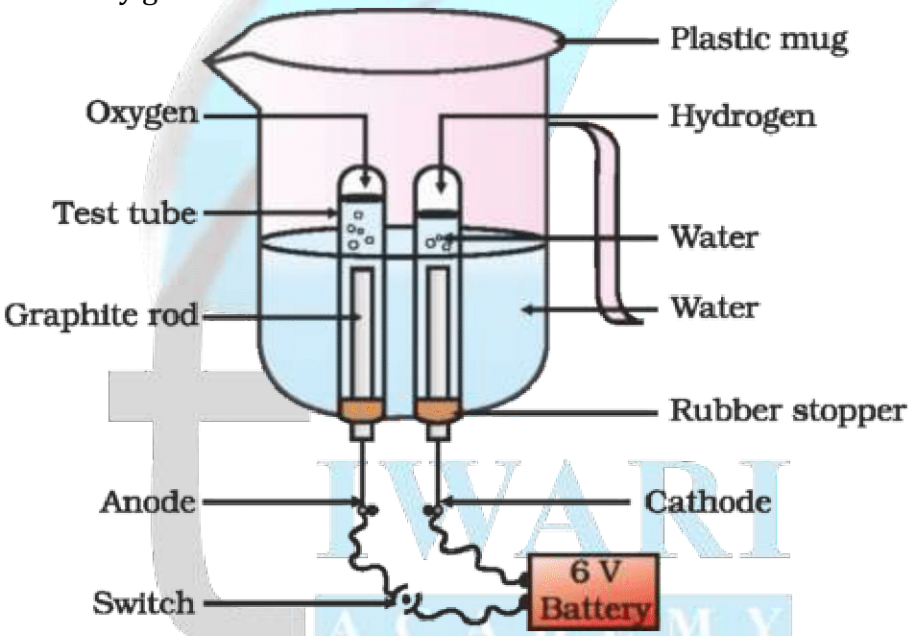
General Instructions

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. Study the figure carefully given below.



Write the balanced chemical equation of the reaction taking place in this case:
[A] H_2O (Electric/Current) $\rightarrow N_2 + O_2$
[B] $2H_2 + O_2$ (Electric/Current) $\rightarrow 2H_2O$ + Bubbles
[C] $2H_2O + 2O_3$ (Electric/Current) $\rightarrow 2H_2(g) + O_2(g)$
[D] $2H_2O(l)$ (Electric/Current) $\rightarrow 2H_2(g) + O_2(g)$

2. Consider the following chemical equation:
"X"(aq) + sodium chloride(aq) → "Y"(white ppt) + Sodium nitrate(aq)

	"X"	"Y"
[A]	Silver Nitrate	Silver Chloride
[B]	Potassium Chloride	Silver Nitrate
[C]	Potassium Nitrate	Silver Nitrate
[D]	Silver Chloride	Silver Nitrate

3. In which of the following chemical equations, the abbreviations represent the correct States of the reactants and products involved at reaction temperature?

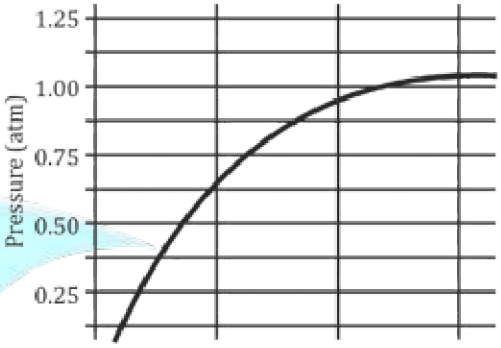
[A] $2H_2(l) + O_2(l) \rightarrow 2H_2O(g)$

[B] $2H_2(g) + O_2(l) \rightarrow 2H_2O(l)$

[C] $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$

[D] $2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$

4. A student of class 10 standard, he added 10 gram of calcium carbonate in a rigid container, secured it tightly and started to heat it. After sometime, and increase in pressure was observed, the pressure reading was then noted at intervals of 5 minutes and plotted against time, in a graph as shown below. During which time interval did maximum decomposition took place?



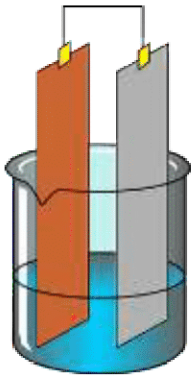
[A] 15 – 20 min

[B] 10 – 15 min

[C] 5 – 10 min

[D] 0 – 5 min

5. The production of hydrogen from water via electrolysis is a clean process, resulting in only oxygen being produced as a by-product. The water electrolysis hydrogen (oxygen) plant is equipment that electrolysis of water to produce hydrogen and oxygen by an electrolyte. Electrolysis of water is a decomposition reaction.



The mole ratio of hydrogen and oxygen gases liberated during the electrolysis of water is:

[A] 1 : 1

[B] 2 : 1

[C] 4 : 1

[D] 1 : 2

6. Rahul along with his friend went to a nearby playground. They were standing under a tree when an ant stung his friend on his hands due to which his friend's hand was paining a lot. Name the acid along with its chemical formula present in ant sting.

[A] Acetic acid (CH_3COOH)

[B] Lactic acid ($C_3H_6O_3$)

[C] Carbonic acid (H_2CO_3)

[D] Methanoic acid (HCOOH)

7. Zinc granules on treating with a substance "X", form a salt sodium zincate along with the evolution of gas "Y" which burns with a Pop sound when brought near a burning candle. Identify the substance "X" and gas evolved "Y".

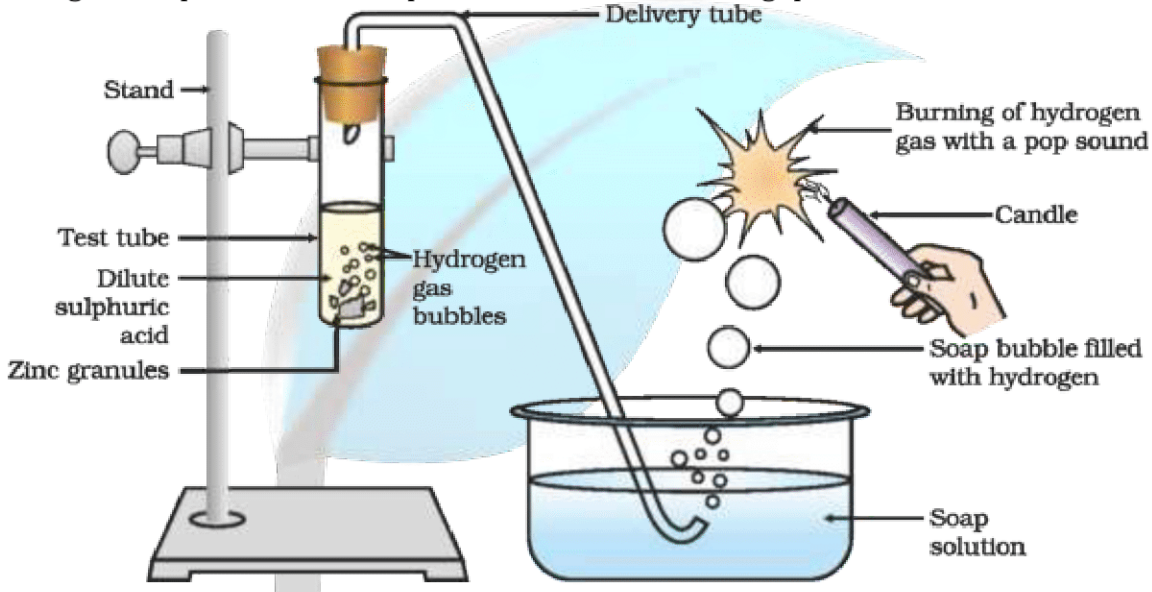
	"X"	"Y"
[A]	Acetic acid	Hydrogen
[B]	Sodium Hydrogen	Hydrogen
[C]	Sodium Hydroxide	Oxygen
[D]	Zinc Hydroxide	Hydrogen

8. Identify the correct representation of reaction occurring during chloro-alkali process.

[A] $2NaCl(l) + 2H_2O(l) \rightarrow 2NaOH(l) + Cl_2(g) + H_2(g)$
[B] $2NaCl(l) + 2H_2O(qa) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(aq)$
[C] $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(aq) + H_2(aq)$
[D] $2NaCl(aq) + 2H_2O(aq) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$

9. What happens when the solution of an acid is mixed the solution of a base in a test tube?
[I] The temperature of the solution increases
[II] The temperature of the solution decreases
[III] The temperature of the solution remains the same
[IV] Salt formation takes place
[A] Only [I]
[B] [I] and [III]
[C] [I] and [III]
[D] [I] and [IV]

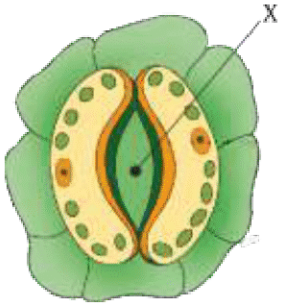
10. Study the given experimental set-up and answer the following question.



A new product sodium zincate is formed if sulfuric acid is replaced wit:
[A] Sodium Hydroxide
[B] Sodium Oxide
[C] Zinc oxide
[D] Water

11. Which of the following statement (s) is (are) true about respiration?
(I) During inhalation, ribs move inward and diaphragm is raised.
(II) In the alveoli, exchange of gases takes place i.e., oxygen form alveolar air.
(III) Haemoglobin has greater affinity for carbon dioxide than oxygen.
(IV) Alveoli increases surface area for exchange of gases.
[A] (I) and (IV)
[B] (II) and (III)
[C] (I) and (III)
[D] (II) and (IV)

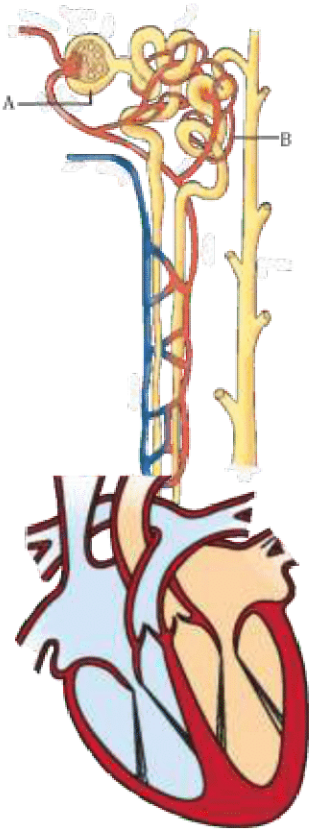
12. If the structure marked X in the diagram given below is blocked, then which of the processes will not occur?



[A] Transpiration and respiration
[B] Transpiration, photosynthesis and respiration
[C] Respiration, Transpiration, and Transportation
[D] Respiration, and photosynthesis

13. The correct function of parts labelled "A" and "B" in the figure below is:

	PART – "A"	PART – "B"
[A]	Filtration of blood	Reabsorption of glucose, salts and amino acids
[B]	Reabsorption of glucose, salts and amino acids	Filtration of blood
[C]	Reabsorption of hormones from blood	Filtration of blood
[D]	Collection of urine	Reabsorption of glucose, salts and amino acids



14. Which of the following statements is or are true about heart?
(i) Left Atrium receives oxygenated blood from different parts of body while right Atrium receives deoxygenated blood from lungs
(ii) Left ventricle pumps oxygenated blood to different body parts while right ventricle pumps deoxygenated blood to lungs
(iii) Left Atrium transfer oxygenated blood to right ventricle which sends it to different body parts
(iv) Right Atrium receives deoxygenated blood from different parts of the body while left ventricle pumps oxygenated blood to different parts of the body
[A] (i) [B] (ii)
[C] (ii) and (iv) [D] (i) and (iii)

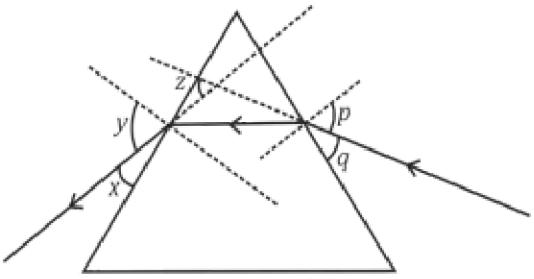
15. Match the words of Column (A) with that of Column (B):

	Column (A)	Column (B)
[A]	Phloem	Excretion (i)
[B]	Nephron	Translocation of food (ii)
[C]	Veins	Clotting of blood (iii)
[D]	Platelets	Deoxygenated blood (iv)

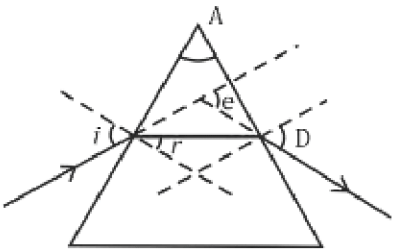
[A] A – (ii), B – (i), C – (iv), D – (iii) [B] A – (iii), B – (ii), C – (i), D – (iv)
[C] A – (iv), B – (iii), C – (ii), D – (i) [D] A – (i), B – (iv), C – (iii), D – (iv)

16. Select the incorrect statement:
[A] The arteries have thick, elastic walls
[B] The veins have thin walls
[C] Veins have valves to ensure that blood flows in one direction only.
[D] Arteries have valves to ensure that blood flows in one direction only.

17. Study the following ray diagram:
In this diagram, the angle of incidence, the angle of emergence, and the angle of deviation respectively have been represented by:
[A] y, p and z
[B] x, q and z
[C] p, y and z
[D] p, z and y



18. In the following diagram, the correctly marked angles are:



[A] All
[B] ∠i and ∠A
[C] ∠i, ∠r and ∠A
[D] ∠i, ∠A and ∠D

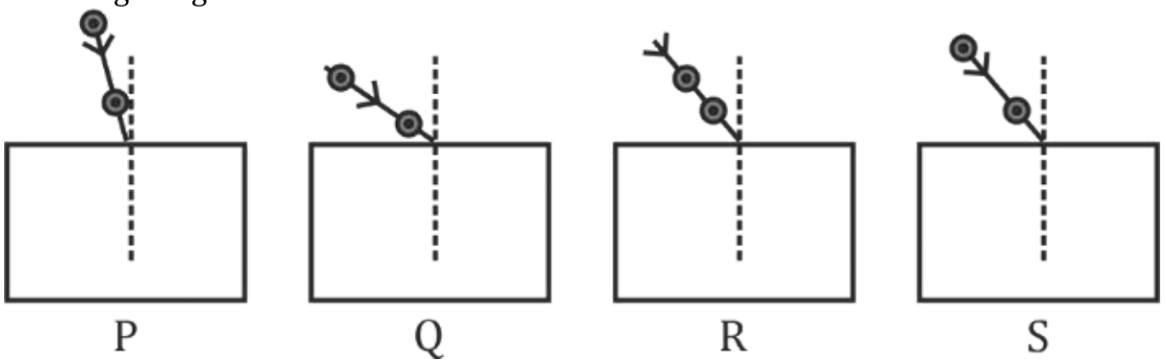
19. Twinkling of stars is due to atmospheric:
[A] Dispersion of light by water droplets
[B] Refraction of light by different layers of varying refractive indices
[C] Scattering of light by dust particles
[D] Internal reflection of light by clouds

20. A 55-year-old near-sightedness person wears spectacles with a power of - 2.5 D for distance viewing. His doctor prescribes a correction of + 2.0 D in the near-vision section of his bi-focal. This is measured relative to the main part of the lens.
Select the correct statements:
(i) The focal length of distance-viewing part of the lens is - 40 cm.
(ii) The focal length of the near-vision part of the lens is + 50 cm.
(iii) The focal length of distance-viewing part of the lens is + 50 cm.
(iv) The focal length of near-vision part of the lens is - 40 cm.
[A] Both (i) and (ii)
[B] Both (i) and (iv)
[C] Both (ii) and (iii)
[D] Both (iii) and (iv)

21. When object moves closer to convex lens the image formed will be:
[A] away from the lens on the other side of lens
[B] towards the lens
[C] away from the lens on the same side of an object
[D] first towards and then away from the lens

22. To determine the approximate value of the focal length of a given concave mirror, you focus the image of a distant object formed by the mirror on a screen. The image obtained on the screen, as compared to the object is always:
[A] laterally inverted and diminished
[B] inverted and diminished
[C] erect and diminished
[D] erect and highly diminished

23. Select from the following the best experimental setup for tracing the path of a Ray of light passing through a rectangular glass slab:



[A] P
[B] Q
[C] R
[D] S

24. A student focused the image of a candle flame on a white screen using a convex lens. He noted down the position of the candle screen and the lens as under:
(i) position of candle = 26.0 cm
(ii) position of convex lens = 50.0 cm
(iii) position of the screen = 90.0 cm
Students noted down the values of object distance (u), image distance (v) and also calculate the focal length (f) of the convex lens used.
Select the row containing the correct values as per the sign convention:

	Object Distance (u) cm	Image Distance (v) cm	Focal Length (f) cm
[A]	-26 cm	- 50 cm	+ 30 cm
[B]	-26 cm	- 40 cm	- 15 cm
[C]	-24 cm	- 40 cm	+15 cm
[D]	-24 cm	+ 40 cm	+ 15 cm

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. Which of the following properties is generally not shown by metals:
[A] Electrical conduction
[B] Sonorous in nature
[C] Dullness
[D] Ductility

26. An element A is soft and can be cut with a knife. This is very reactive to air and cannot be kept in open air. It reacts vigorously with water. Identify the element from the following:
(a) Mg
(b) Na
(c) P
(d) Ca

27. What happens when calcium is treated with water?
(i) it is does not react with water
(ii) it reacts violently with water
(iii) it reacts less violently with water
(iv) bubbles of hydrogen gas formed stick to the surface of calcium
[A] (i) and (iv)
[B] (ii) and (iii)
[C] (i) and (ii)
[D] (iii) and (iv)

28. Which among the following statements is incorrect for magnesium metal?
[A] It burns in oxygen with a dazzling white flame
[B] It reacts with cold water to form magnesium oxide and evolves hydrogen gas
[C] It reacts with hot water to form magnesium hydroxide and evolves hydrogen gas
[D] It reacts with steam to form magnesium hydroxide and evolves hydrogen gas

29. Metals are refined by using different methods. Which of the following metals are refined by electrolytic refining?
[A] Au & Cu
[B] K & Na
[C] Cu & Na
[D] Cu & K

30. Monalisa took three beakers A, B and C containing zinc sulphate, silver sulphate and iron (II) sulphate solutions respectively. Copper pieces were added to each beaker. The solution will appear blue in the case of:

[A] Beaker A
[B] Beaker B
[C] Beaker C
[D] Beakers B and C

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): Carbon dioxide turns lime water milky
Reason (R): Carbon dioxide sullies the water
[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): HCl converts pepsinogen into active enzyme pepsin
Reason (R): Pepsin converts protein into and proteoses and peptones.
[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): Light travels faster in glass than in air.
Reason (R): Glass is denser than air.
[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): The sun's disc appears to be flattened at sunrise and sunset.
Reason (R): The sun is near the horizon at sunrise and sunset and sunlight suffers atmospheric refraction.
[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): After white washing the walls, a shiny white finish on walls is obtained after 2 to 3 days.
Reason (R): Calcium oxide reacts with carbon dioxide to form calcium hydroxide carbonate which gives shiny white finish.
[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. Which of the following statements about the autotrophs is incorrect?
[A] They synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll.
[B] They store carbohydrates in the form of starch.
[C] They convert carbon dioxide and water into carbohydrates in the absence of sunlight.
[D] They constitute the first trophic level in food chains

37. If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected?
[A] Proteins breaking down into amino acids
[B] Starch breaking down into
[C] Fats breaking down into fatty acids and glycerol sugars
[D] Absorption of vitamins

38. In which of the following groups of organisms, food material is broken down outside the body and absorbed?
[A] Mushroom, green plants, Amoeba
[B] Yeast, mushroom, bread mould
[C] Paramecium, Amoeba, Cuscuta
[D] Cuscuta, lice, tapeworm

39. In the excretory system of human beings, some substance in the initial filtrate such as glucose, amino acids, salts and water are selectively reabsorbed in:
[A] Urethra
[B] Nephron
[C] Ureter
[D] Urinary bladder

40. Pseudopodia are:
[A] Small hair like structures present on unicellular organisms
[B] False feet developed in some unicellular organisms
[C] Long tube-like structures coming out of the mouth
[D] Suckers which are attached to the walls of the intestine

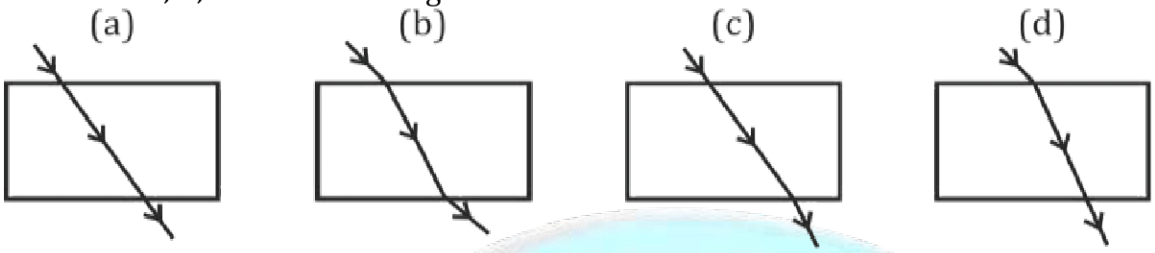
41. Which of the following is used artificially to remove nitrogenous waste products from the blood?
[A] Ventilator
[B] Transfusion
[C] Hemodialysis
[D] Angiogram

42. The correct sequence of anaerobic reactions in yeast is:
[A] Glucose (cytoplasm) → Pyruvate (mitochondria) → Ethanol + Carbon dioxide
[B] Glucose (cytoplasm) → Pyruvate (cytoplasm) → Lactic acid
[C] Glucose (cytoplasm) → Pyruvate (mitochondria) → Lactic acid
[D] Glucose (cytoplasm) → Pyruvate (cytoplasm) → Ethanol + Carbon dioxide

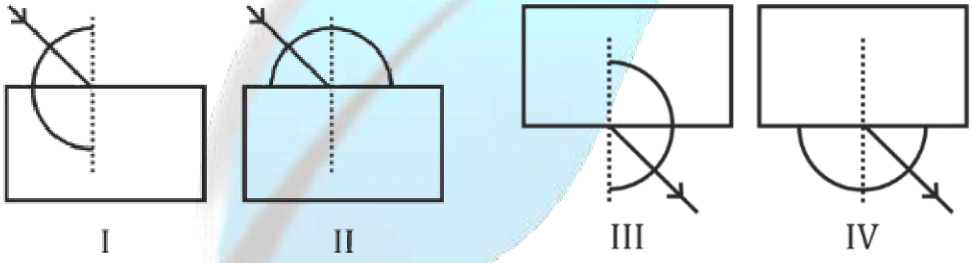
43. The laws of reflection hold true for:
[A] Plane mirrors only
[B] Concave Mirrors only
[C] Convex Mirrors only
[D] All reflecting surfaces

44. Which of the following lenses would you prefer to use while reading small letters found in a dictionary?
[A] A convex lens of focal length 50 cm
[B] A concave lens of focal length 50 cm
[C] A convex lens of focal length 5 cm
[D] A concave lens of focal length 5 cm

45. The part of a ray of light coming from air passing through a rectangular glass slab is traced by four Students shown as A, B, C and D in the figure. Which one of them is correct?



46. In which of the following diagram has the Protractor (D) been correctly placed to measure the angle of incidence and the angle of emergence?



[A] I, III
[B] I, IV
[C] II, III
[D] II, IV

47. Three students A, B, and C focussed a distant building on a screen with the help of a concave mirror. To determine focal length of the concave mirror they measured the distances as given below:
Student A: From mirror to the screen **Student B**: From building to the screen
Student C: From building to the mirror.
Who measured the focal length correctly?
[A] Only A
[B] Only B
[C] A and B
[D] B and C

48. Which of the following metals exist in their native state in nature?
(I) Cu (II) Au (III) Zn (IV) Ag
[A] (I) and (II)
[B] (II) and (III)
[C] (II) and (IV)
[D] (III) and (IV)

SECTION – C

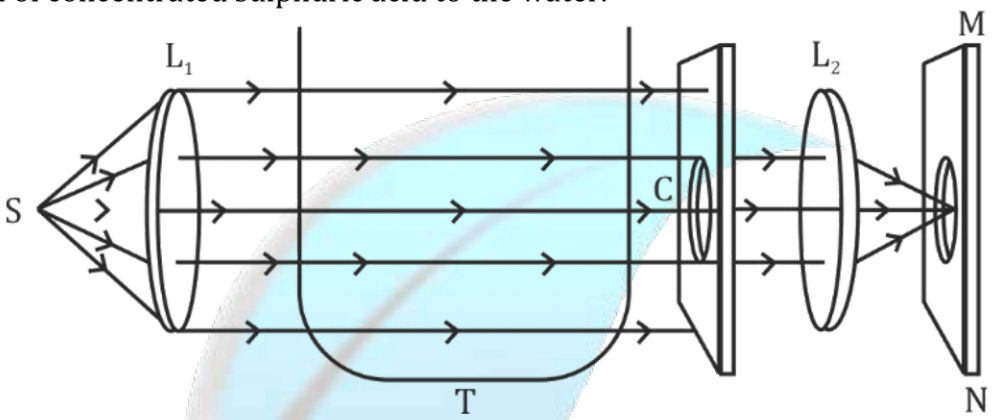
Section - C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section.

The first attempted 10 questions would be evaluated.

Case – 1:

Place a strong source (S) of white light at the focus of a converging lens (L). Allow, the light beam to pass through a transparent glass tank (T) containing clear water. Allow the beam of light to pass through a circular hole (C) made in a cardboard. Obtain a sharp image of the circular hole on a screen (MN) using a second converging lens (L), as shown in Fig. below.

Dissolve about 200 g of sodium thiosulphate (hypo) in about 2 L of clean water taken in the tank. Add about 1 to 2 ml of concentrated sulphuric acid to the water.



49. What is the role of lenses L_1 and L_2 in the activity?

	Role of Lens L_1	**Role of Lens L_2**
[A]	Converges a beam of light placed at "S"	Converges a parallel beam of light
[B]	Provides a parallel beam of light	Converges a parallel beam of light
[C]	Provides a parallel beam of light	Provides a parallel beam of light
[D]	Converges a beam of light placed at "S"	Provides a parallel beam of light

50. When about 200 g of sodium thiosulphate (hypo) is dissolved in about 2 L of clean water taken in the tank and about 1 to 2 ml of concentrated sulphuric acid is added to the water, it is observed that:

[A] A true solution is formed after 2 and 3 minutes

[B] A suspension of sodium is formed in the tank

[C] Sulphur particles start precipitating in about 2 and 3 minutes

[D] No change is observed

51. The observations regarding change in colour of light in the tank about 2 to 3 minutes after adding sulphuric acid to hypo is:

(i) Blue light can be seen from the side of the tank facing the circular hole.

(ii) Blue light can be seen from the three sides of the glass tank

(iii) At first orange red light and then red light can be seen from the side of the tank facing the circular hole.

(iv) At first orange red light and then red light can be seen from the three sides of the glass tank

Select the incorrect observations:

[A] Both (i) and (iii)

[B] Both (ii) and (iii)

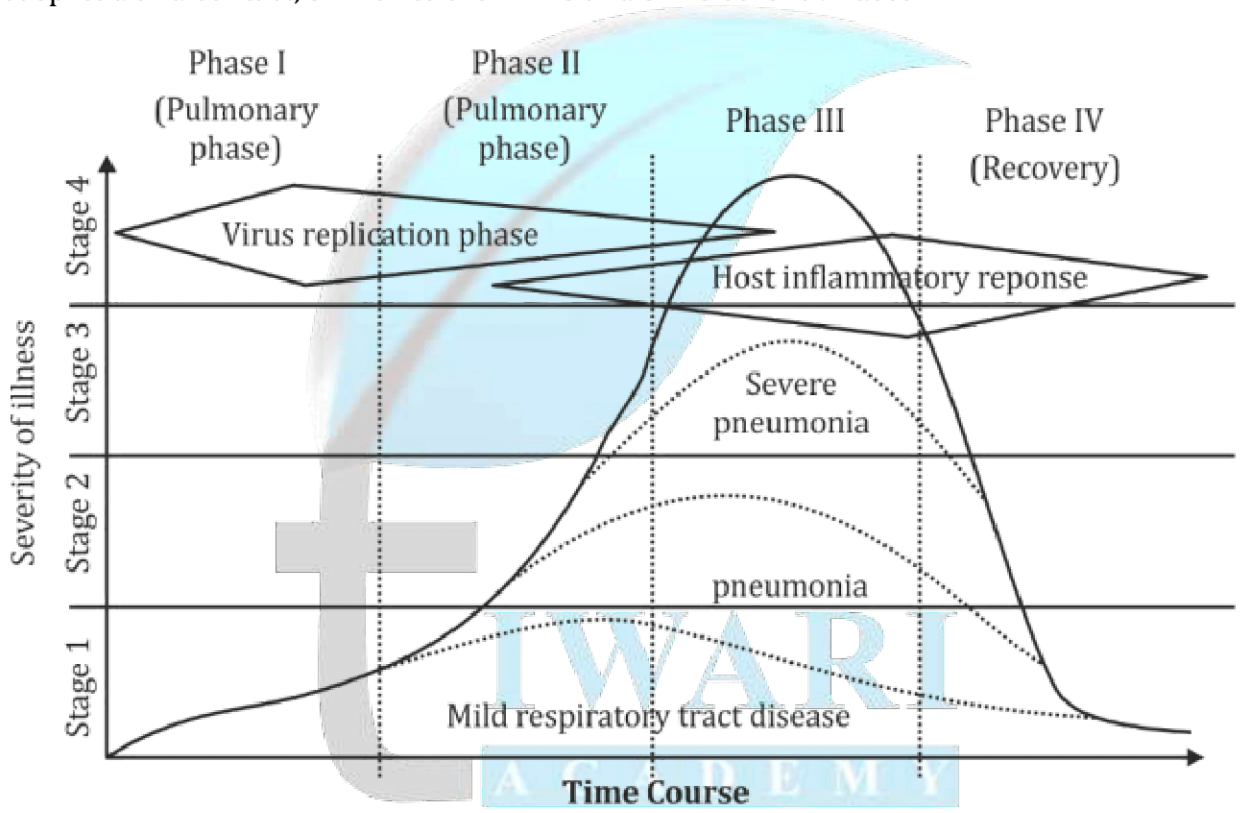
[C] Both (i) and (iv)

[D] Both (ii) and (iv)

52. The observations can be explained by the phenomenon of:
[A] Scattering of light
[B] Reflection of light
[C] Refraction of light
[D] Dispersion of light

Case – 2:

The unfolding COVID-19 pandemic has led to a global crisis which threatens to become a health, economic and humanitarian disaster. COVID-19 or CORONA VIRUS Disease 2019 is the term used by the WHO to refer to disease caused by this virus. The virus was also called 2019-nCoV (or 2019 novel Corona Virus) prior to being official named by the WHO. COVID-19 is predominantly a respiratory disease, with severity ranging from mild to fatal, and transmission mostly from the spread of respiratory droplets. SARS-CoV-2 is transmitted person-to-person, predominantly by respiratory droplet spread and contact, similar to the MERS and SARS coronaviruses.



53. Select the incorrect statement about the covid-19 disease:
[A] covid-19 diseases caused by a virus
[B] it is a respiratory disease
[C] it is transmitted a mostly by respiratory droplets
[D] it can be cured by taking antibiotics

54. From the statements given below, identify the incorrect cost of the disease:

	Respiratory Disease	Cause
[A]	Tuberculosis	infection of trachea
[B]	Emphysema	reduction of gas exchange area of the lungs
[C]	Asthma	constriction of the bronchi and bronchioles
[D]	Pneumonia	an infection of the alveoli

55. In the respiratory system, an extensive network of blood vessels is present in:
[A] Bronchioles
[B] Alveoli
[C] Trachea
[D] Pharynx

56. which of the following statement is false about the trachea?
[A] it has rings of cartilage
[B] it is covered by epiglottis
[C] it splits into the right and left lungs
[D] it is also called windpipe

Case – 3:
Piyush, who was a back bencher in class, started complaining of frequent headaches. His parents took him to the nearest clinic and the doctor referred him to the eye specialist. The eye specialist tested his vision and asked Piyush whether he was able to read whatever the teacher wrote on the black board clearly or not. He replied in the negative. The doctor told his parents about the defect of vision that Piyush was suffering from and advised corrective glasses.
After wearing the glasses, Piyush was now able to read the black board clearly and also got rid of his headaches.

57. Piyush was suffering from:
[A] Cataract
[B] Myopia
[C] Hypermetropia
[D] Presbyopia

58. Select the correct statements regarding the defect of vision Piyush was suffering from:
(i) A person with this defect has the far point nearer than infinity.
(ii) A person with this defect has the near point greater than the least distance of distinct vision.
(iii) A person suffering from this defect may see clearly up-to a distance of a few metres.
(iv) A person suffering from this defect may not see clearly beyond the near point.
[A] Both (i) and (iii)
[B] Both (ii) and (iii)
[C] Both (i) and (iv)
[D] Both (ii) and (iv)

59. Which of the following is not true about the defect of vision Piyush is suffering from?
[A] It is caused due to excessive curvature of the eye lens
[B] It may be caused due to elongation of the eyeball.
[C] The image of a distant object is formed behind the retina.
[D] It is corrected by using a concave lens of appropriate power.

60. The far point of a myopic person is 50 cm in front of the eyes. The nature and power of the lens required for correct the problem is:

	Nature Of Lens	Power Of Lens
[A]	Concave	- 0.5 D
[B]	Concave	- 2.0 D
[C]	Convex	+ 0.5 D
[D]	Convex	+ 2.0 D