

# Science

## Sample Question Paper 8 (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. The carbonate of metal lead is a white solid. It decomposes when heated to form carbon dioxide and a yellow solid oxide 'X'. What is X?

- |                  |                     |
|------------------|---------------------|
| [A] Zinc oxide   | [B] Lead oxide      |
| [C] Silver oxide | [D] Magnesium oxide |

2. Which of the following statements is correct about water of crystallization?

- |   |  |
|---|--|
| [A] Crystals of salts obtain their shape.               | [B] Crystals of salts obtain their colour. |
| [C] Crystals of salts form a part of crystal structure. | [D] All of the above.                      |

3. Which of the following is exothermic reaction?

- |  |                                   |
|--|-----------------------------------|
| [A] Dissolution of sodium hydroxide in water | [B] Evaporation of water          |
| [C] Sublimation of silver chloride           | [D] Dissolution of salt in water. |

4. A milk man adds a very small amount of baking soda to fresh milk:

- |  |  |
|--|--|
| [A] To increase the rate of fermentation | [B] To decrease the rate of fermentation |
| [C] To increase its quality              | [D] To make paneer.                      |

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

- |                       |                           |
|-----------------------|---------------------------|
| [A] Calcium Carbonate | [B] Copper (II) Hydroxide |
| [C] Sodium Hydroxide  | [D] Sulphur Dioxide       |

6. Which of the following is not a natural indicator?

- |                                |                        |
|--------------------------------|------------------------|
| [A] Red cabbage juice          | [B] Turmeric juice     |
| [C] Flowers of hydrangea plant | [D] None of the above. |

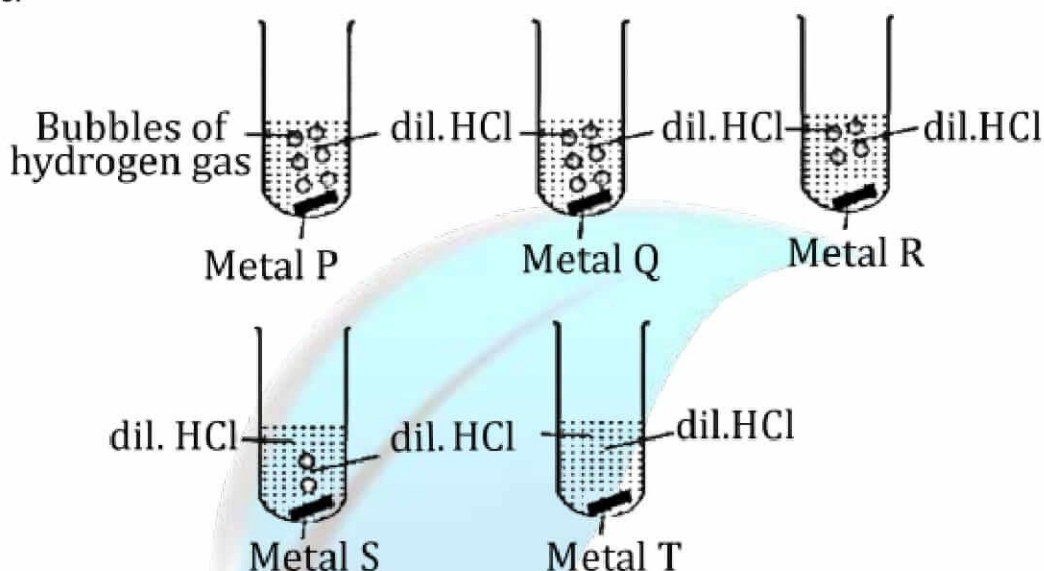
7. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?

- |                                 |                       |
|---------------------------------|-----------------------|
| [A] Baking powder               | [B] Lime              |
| [C] Ammonium hydroxide solution | [D] Hydrochloric acid |

8. The element that liberate  $H_2$  gas on reacting with diluted nitric acid is:

- [A] Zn and Mg
- [B] Mn and Sn
- [C] Mg and Mn
- [D] Mn and Fe

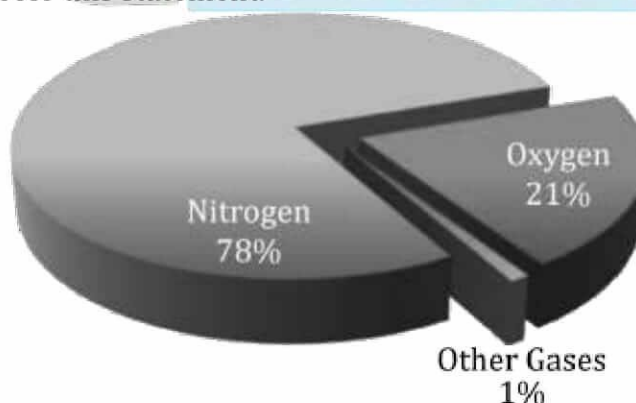
9. Mahi observed the rate of evolution of hydrogen gas with five metals P, Q, R, S and T at room temperature.



Based on above observation, the metals P, Q, R, S and T are:

	P and Q	R and S	Only T
[A]	Zn and Al	Mg and Cu	Fe
[B]	Mg and Al	Zn and Fe	Cu
[C]	Al and Zn	Mg and Fe	Cu
[D]	Fe and Cu	Mg and Al	Cu

10. "Although nitrogen is the most abundant gas in the atmosphere, it does not combustion". Identify the correct reason for this statement.



- [A] Nitrogen is a reactive gas
- [B] Nitrogen is an inert gas
- [C] Nitrogen is an explosive gas
- [D] Only hydrocarbons can take part in combustion.

11. 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.

12. In which part of the alimentary canal food is finally digested?

- [A] Stomach
- [B] Mouth cavity
- [C] Small intestine
- [D] Large intestine

13. Choose the function of the pancreatic juice from the following

- [A] Trypsin digests proteins and lipase carbohydrates
- [B] Trypsin digests emulsified fats and lipase proteins
- [C] Trypsin and lipase digest fats
- [D] Trypsin digests proteins and lipase emulsified fats.

14. During deficiency of oxygen in tissues of human beings, pyruvic acid is converted into lactic acid in the

- [A] Cytoplasm
- [B] Chloroplast
- [C] Mitochondria
- [D] Golgi body

15. What prevents backflow of blood inside the heart during contraction?

- [A] Valves in heart
- [B] Thick muscular walls of ventricles
- [C] Thin walls of Atria
- [D] All the above.

16. 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)

17. In which of these cases, a real image, equal in size to the object, is obtained?

- [A] When an object is placed at the centre of curvature in front of a concave mirror.
- [B] When an object is placed at the centre of curvature in front of a plane mirror.
- [C] When an object is placed at the centre of curvature in front of a convex mirror.
- [D] None of these.

18. Choose the incorrect statement.

- [A] A concave mirror can give a virtual image.
- [B] A concave mirror can give a virtual image.
- [C] A convex lens can give a virtual image.
- [D] All of these.



19. Upon which of these factors are amount of light reflected depends?

[A] Nature of material of the object.

[B] Nature of the surface.

[C] Smoothness of the surface.

[D] All of these.

20. In order to get a diminished and virtual image the object can be placed anywhere in front of a

[A] Concave mirror.

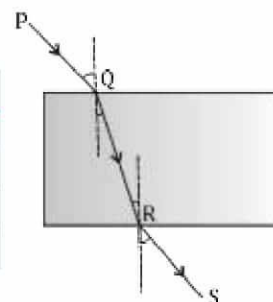
[B] Plane mirror.

[C] Convex mirror.

[D] None of these.

21. Which of the following correctly represents the incident ray, the refracted Ray and the emergent Ray in the given glass slab?

	Incident Ray	Refracted Ray	Emergent Ray
[A]	PQ	QR	RS
[B]	PQ	RS	QR
[C]	RS	QR	PQ
[D]	RS	PQ	QR



22. When an object of size 1 cm is placed at a distance of 15 cm from a concave mirror of focal length 10 cm, the position, nature, and size of the image formed will be –

[A] on the left side, 30 cm, real, inverted and magnified

[B] on the left side, 20 cm, virtual, upright and diminished

[C] on the right side, 30 cm, real, inverted and magnified

[D] on the right side, 20 cm, virtual, upright and diminished

23. Which of the following statement is or are incorrect?

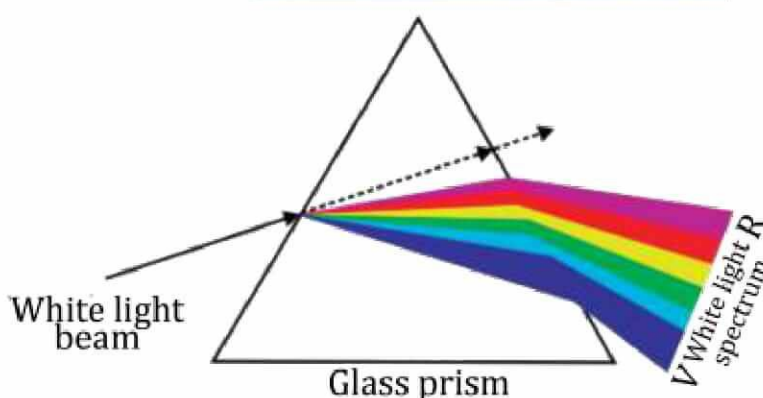
[A] A virtual image is formed when light rays coming from an object only appear to meet at a point when produced backwards, after reflection from a mirror.

[B] A real image is formed when light rays coming from an object actually meet at a point after reflection from a mirror or refraction through a lens.

[C] The image which can be obtained on a screen is called a virtual image.

[D] While watching a movie in a cinema hall, we see the images of actors and actresses on the cinemas screen and it is an example of real image.

24. Choose the correct statement regarding the propagation of light of different colours of white light in air?



[A] Red light moves fastest.

[B] Blue light moves faster than green light.

[C] All the colours of the white light move with the same speed.

[D] Yellow light moves with the mean speed as that of the red and the violet light.

## 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. The given reaction shows:  $3\text{RSO}_4 + 2\text{Q} \rightarrow \text{Q}_2(\text{SO}_4)_3 + 3\text{R}$

- [A] Q is more reactive than R. [B] Q is less reactive than R.  
[C] Q and R are equally reactive. [D] None of the above.

26. Choose the correct statement:

- [A] Zinc and lead are more reactive elements than copper.  
[B] Zinc and lead are less reactive elements than copper.  
[C] Zinc and copper are more reactive elements than lead.  
[D] Copper and lead are more reactive elements than zinc.

27. Select the correct statement.

- [A] A substance which causes removal of oxygen from substances is called oxidizing agent.  
[B] Addition of any electronegative atom in a chemical reaction is called oxidation.  
[C] Addition of hydrogen is called oxidation.  
[D] All the above.

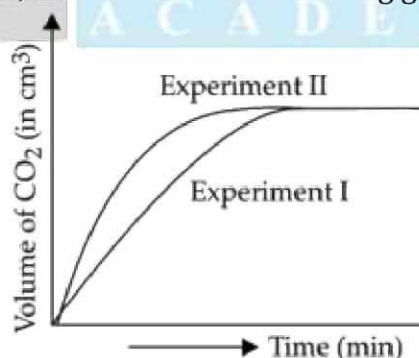
28. Name the products formed when baking soda is heated:

- [A] Sodium sulphate and carbon dioxide gas.  
[B] Sodium carbonate and water.  
[C] Sodium carbonate, carbon dioxide, and water.  
[D] Sodium oxide carbon dioxide and water.

29. Sanjana performed an experiment in which marble chips or calcium carbonate reacted with hydrochloric acid. The reactions that took place is as shown below:



After performing the reaction twice, she obtained the following graphs:



Choose the correct statements.

- A. Reaction is faster in experiment II.  
B. Marble chips taken in experiment II are smaller than the marble chips taken in experiment I.  
C. Same amount of marble chips and hydrochloric acid is used for both the experiments.

- [A] Statement A is correct. [B] Statement A and B is correct.  
[C] Statement A and C is correct. [D] All of these.



30. When aqueous sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) reacts with  $\text{HCl}$  (aq), it gives
- [A]  $\text{NaOH}$ ,  $\text{H}_2$  and  $\text{CO}_2$  [B]  $\text{NaCl}$ ,  $\text{H}_2\text{O}$  and  $\text{CO}_2$   
[C]  $\text{NaHCO}_3$ ,  $\text{H}_2$  and  $\text{CO}_2$  [D]  $\text{NaHCO}_3$ ,  $\text{H}_2\text{O}$  and  $\text{CO}_2$

**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): Sodium hydrogen carbonate is used in fire extinguisher.  
Reason (R): Sodium hydrogen carbonate is a mild 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.

32. Assertion (A): Ionic compounds have high melting and boiling points.  
Reason (R): Ionic compounds are compounds consisting of ions.

- [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): Excretion is a biological process.  
Reason (R): Gaseous products in plants are excreted via lenticels in stem.

- [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): When a concave mirror, held under water, its focal length will increase.  
Reason (R): The focal length of a concave mirror is independent of the medium in which it is placed.

- [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): Blue colour of sky appears due to scattering of blue colour.  
Reason (R): Blue colour has shortest wavelength in visible spectrum.

- [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.

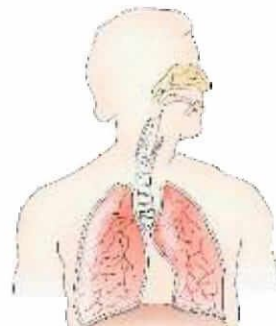
36. Which of following is the mineral acid?

- [A] Hydrochloric acid  
[C] Acetic Acid

- [B] Citric Acid  
[D] Lactic acid

37. Breathing is the process that brings oxygen in the air into your lungs and moves oxygen and through your body. It involves two processes- inhalation (breathing in) and exhalation (breathing out). Which is the correct sequence of air passage during inhalation?

- [A] Nostrils → larynx → pharynx → trachea → lungs  
[B] Nasal passage → trachea → pharynx → larynx → alveoli  
[C] Larynx → nostrils → pharynx → lungs  
[D] Nostrils → pharynx → larynx → trachea → alveoli



38. The non-metals are electro positive in nature:

- [A] True  
[C] Cannot say

- [B] False  
[D] Partially True/False

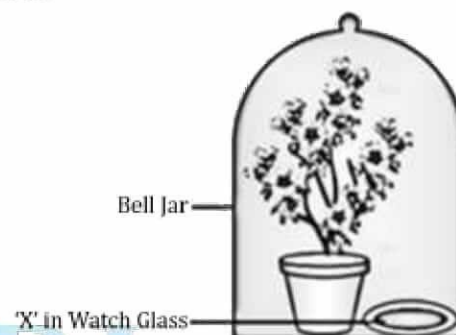
39. Where does aerobic respiration occur in a cell?

- [A] Mitochondria  
[C] Nucleus

- [B] Cytoplasm  
[D] Plastids

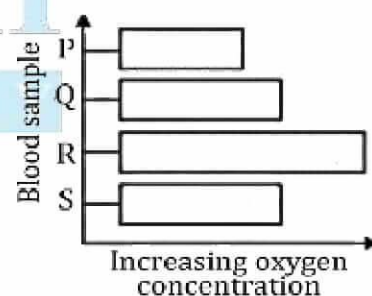
40. The given experimental set up shows that carbon dioxide is essential for photosynthesis. Identify the substance 'X', kept in watch-glass.

- [A] Potassium Hydroxide.  
[B] Sodium bicarbonate.  
[C] Sodium carbonate.  
[D] Potassium Sulphate.



41. Study the given graph and find out which blood sample is taken from a pulmonary vein:

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



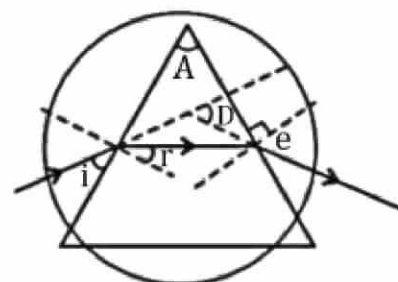
42. From which structure, the free oxygen gas produced during photosynthesis release?

- [A] Epidermis  
[C] Cortex

- [B] Stomata  
[D] Guard Cell

43. In the following ray diagram, the correctly marked angles are:

- [A]  $\angle i$  and  $\angle e$   
[B]  $\angle A$  and  $\angle D$   
[C]  $\angle D$ ,  $\angle i$ , and  $\angle e$   
[D]  $\angle A$ ,  $\angle r$  and  $\angle D$





44. Focal length of a plane mirror is

- [A] Infinite  
[C] + 25

- [B] Zero  
[D] - 25

45. The focal length of a concave mirror with radius of curvature 12 cm is

- [A] 12 cm  
[C] 6 cm

- [B] - 24 cm  
[D] - 6 cm

46. The colour of scattered light depends on

- [A] Wavelength of light.  
[C] Tyndall Effect.

- [B] Size of scattering particles.  
[D] None of these.

47. How spherical mirror is made?

- [A] From cut portion of hollow sphere of glass.  
[C] From cut portion of sphere of glass.

- [B] From cut portion of sphere of plastic.  
[D] From cut portion of sphere of metal.

48. Principal axis is:

- [A] Imaginary line joining of two centres of curvature.  
[B] Centres of two imaginary spheres of which lens is a part.  
[C] Centre point of a lens.  
[D] Radii of two imaginary spheres of which the lens is a part.

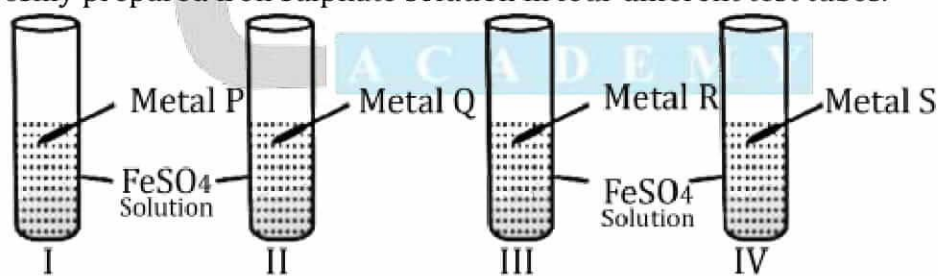
### SECTION - C

**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 questions. In an experiment, Shivani took 10 ml of freshly prepared iron sulphate solution in four different test tubes.



She then added four different metal strips to each test tube as shown below. She observed the following results:

- A. In test tubes I and III, black residue was obtained.  
B. In test tubes II and IV, no change was observed.

49. Black residue was obtained in test tubes I and III. This shows that –

- (i) "P" is more reactive than iron.  
(iii) "Q" is less reactive than iron.

- (ii) "R" is more reactive than iron.  
(iv) "S" is less reactive than iron.

- [A] I and II are correct.  
[C] I and III are correct.

- [B] III and IV are correct.  
[D] II and IV are correct.



50. Why no change is observed in test tubes II and IV?

- [A] Metals Q and S should be less reactive than iron.
- [B] Metals P and Q are more reactive than iron.
- [C] Metals P and S are less reactive than iron
- [D] Metals Q and S are more reactive than iron.

51. Metals P, Q, R and S could be respectively

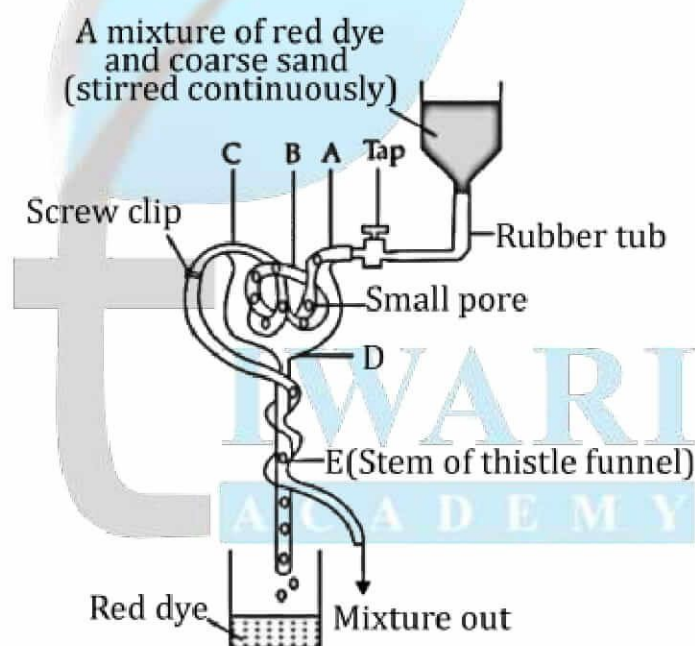
- [A] Al, Cu, Pb, Ag
- [B] Pb, Cu, Ag, Al
- [C] Zn, Al, Cu, Ag
- [D] Zn, Cu, Al, Ag

52. What type of reaction is seen in test tubes I and III?

- [A] Combination reaction.
- [B] Displacement reaction
- [C] Redox reaction
- [D] Neutralisation reaction

### Case - 2:

The diagram shows a model of a nephron and its associated blood vessels. Study the diagram and answer the questions.



53. Which one of the following letters represents glomerulus in the model?

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

54. Each nephron has a cup shaped upper end called, \_\_\_\_ (I) \_\_\_\_ which is labelled as \_\_\_\_ II \_\_\_\_ in the model.

	I	II
[A]	Bowman's capsule	D
[B]	Capillaries	B
[C]	Ampulla	C
[D]	Glomerulus	E

55. This model has been criticized for being a poor representation of a nephron. Which of these statements explain(s) this?

- I. The rubber tubing at B is not split up into numerous branches like the capillary network of the glomerulus.
- II. The rubber tubing at B should be continuous and not contain small pores.
- III. The stem of the thistle funnel (E) is not coiled to represent the convoluted tubules of the nephron.

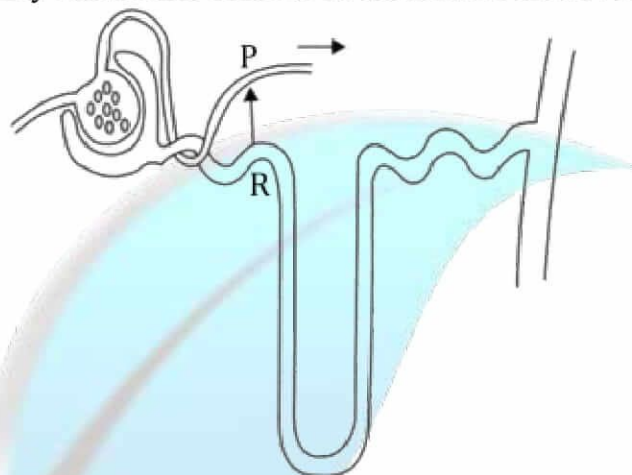
[A] I only

[B] I and III only

[C] II and III only

[D] I, II and III

56. The diagram shows a kidney tubule and some of its associated blood vessels.



Which substance is entirely reabsorbed from the Fluids at "R" to the blood at "P"?

[A] Glucose

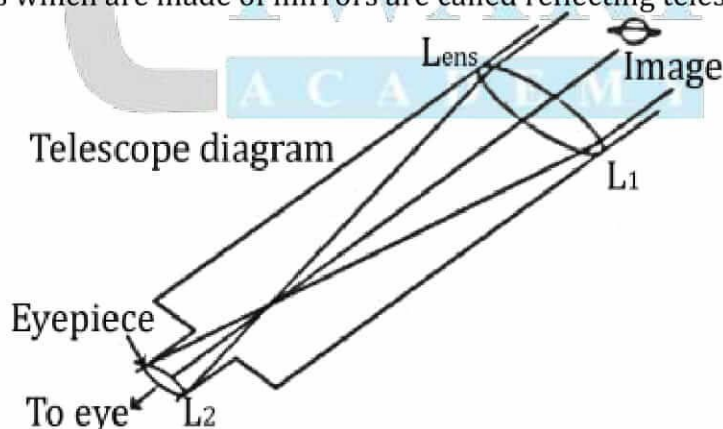
[B] Salts

[C] Urea

[D] Water

### Case -3:

Saraswati wanted to see the stars of the night sky. She knows that she needs a telescope to see those distant stars. She finds out that the telescopes, which are made of lenses, are called refracting telescopes and the ones which are made of mirrors are called reflecting telescopes.



So, she decided to make a refracting telescope. She bought two lenses,  $L_1$  and  $L_2$  out of which  $L_1$  was bigger and  $L_2$  was smaller. The larger lens gathers and bends the light, while the smaller lens magnifies the image. Big, thick lenses are more powerful. So, to see far away, she needed a big powerful lens. Unfortunately, she realised that a big lens is very heavy.

Heavy lenses are hard to make and difficult to hold in the right place. Also, since the light is passing through the lens, the surface of the lens has to be extremely smooth. Any flaws in the lens will change the image. It would be like looking through a dirty window.



57. Based on the diagram shown, what kind of lenses would Saraswati need to make the telescope?

- [A] Concave lenses
- [B] Convex lenses
- [C] Bi-focal lenses
- [D] Flat lenses

58. What is the formula for magnification obtained with a lens?

- [A] Ratio of height of image to height of object.
- [B] Double the focal length.
- [C] Inverse of the radius of curvature.
- [D] Inverse of the object distance.

59. Saraswati did some preliminary experiment with the lenses and found out that the magnification of the eyepiece ( $L_2$ ) is 3. If in her experiment with  $L_2$  she found an image at 24 cm from the lens, at what distance did she put the object?

- [A] 72 cm
- [B] 12 cm
- [C] 8 cm
- [D] 6 cm

60. Saraswati bought not-so-thick lenses for the telescope and polished them. What advantages, if any, would she have with her choice of lenses?

- [A] She will not have any advantage as even thicker lenses would give clearer images.
- [B] Thicker lenses would have made the telescope easier to handle.
- [C] Not-so-thick lenses would not make the telescope very heavy and also allow considerable amount of light to pass.
- [D] Not-so-thick lenses will give her more magnification.

