

**Sample/Pre-Board Paper 14**  
**Class X Term 1 Exam Nov -Dec 2021**  
**Science (086)**

**Time: 90 Minutes**

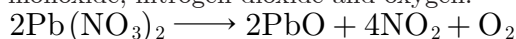
**General Instructions:**

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

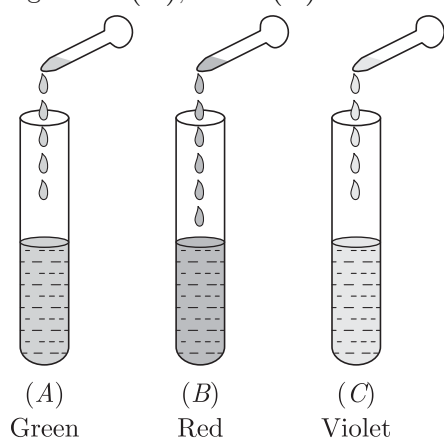
Section – A consists of 24 questions. Attempt any 20 questions from this section.  
The first attempted 20 questions would be evaluated.

1. When lead nitrate is heated, it breaks down into lead monoxide, nitrogen dioxide and oxygen.



The reaction is an example of:

- (a) Combination reaction
  - (b) Decomposition reaction
  - (c) Double displacement reaction
  - (d) Displacement reaction
2. On adding a few drops of universal indicator to three unknown colourless solutions (A), (B) and (C), taken separately in three test tubes shown in the following diagrams, a student observed the changes in colour as green in (A), red in (B) and violet in (C).



The decreasing order of pH of the solutions taken is

- (a)  $A > B > C$
- (b)  $C > A > B$
- (c)  $B > A > C$
- (d)  $C > B > A$

3. Match the items and select the correct alternative:

1.	Sodium	A	On burning produces an acidic gas.
2.	Phosphorus	B	Reacts neither with acids nor bases.

3.	Copper	C	It is so soft that it can be cut with a knife.
4.	Charcoal	D	Burns spontaneously on exposure to air.
		E	Acquires a dull green coating on exposure to air.

- (a) 1- (C), 2- (E), 3- (B), 4- (A)
- (b) 1- (D), 2- (A), 3- (C), 4- (B)
- (c) 1- (D), 2- (E), 3- (C), 4- (B)
- (d) 1- (C), 2- (D), 3- (E), 4- (A)

4. Which information is not conveyed by a balanced chemical equation?

- (a) Symbols and formula of all the substance involved in a particular reaction
- (b) Physical state of reactants and products
- (c) Number of atoms/molecule of the reactants and products formed
- (d) Whether a particular reaction is actually feasible or not

5. Sodium carbonate is a basic salt because it is a salt of

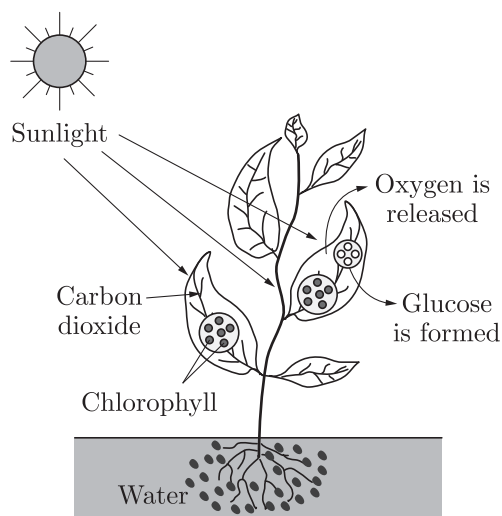
- (a) strong acid and strong base
- (b) weak acid and weak base
- (c) strong acid and weak base
- (d) weak acid and strong base

6. Which of the following statement is correct regarding to physical changes?

- (a) In physical change, new substance is formed.
- (b) In physical change, no new substance is formed.
- (c) In physical change, chemical composition of substance is changed.
- (d) None of these

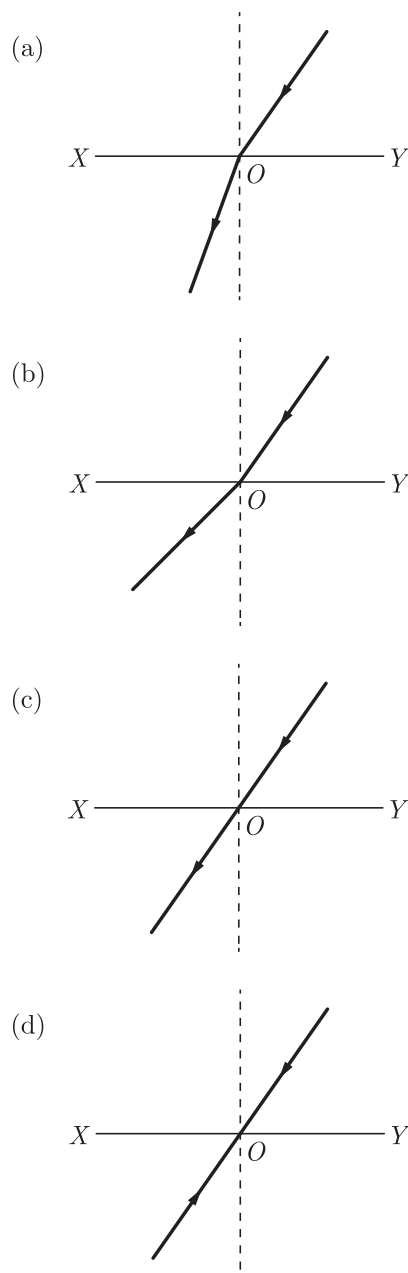


7. The statement of law of conservation of mass is:  
 (a) mass can neither be created nor destroy.  
 (b) mass can be created nor destroy.  
 (c) mass of the body cannot be remain same.  
 (d) none of these.
8. Washing soda is obtained from ..... carbonate.  
 (a) Calcium (b) Sodium  
 (c) Magnesium (d) Zinc
9. The term pH stands for:  
 (a) potential of hydrogen (b) peak of hydrogen  
 (c) push of hydrogen (d) pointed to hydrogen
10. What happens when dilute hydrochloric acid is added to iron fillings?  
 (a) Hydrogen gas and iron chloride are produced.  
 (b) Chlorine gas and iron hydroxide are produced.  
 (c) No reaction takes place.  
 (d) Iron salt and water are produced.
11. The picture given below represents how autotrophs take in substances from the outside and convert them into stored forms of energy.
12. .... is an essential element used in the synthesis of proteins and other compounds in plants.  
 (a) Oxygen (b) Water  
 (c) Nitrogen (d) Carbon dioxide
13. All the sources of energy need to be broken down in the body and converted into:  
 (a) Uniform energy (b) Molecular energy  
 (c) Chemical reactions (d) Digestive process
14. The vein which brings clean blood from the lungs into the heart is known as:  
 (a) Pulmonary vein (b) Hepatic vein  
 (c) Superior vena cava (d) Pulmonary artery
15. In higher vertebrates, systemic circulation takes place between .....  
 (a) body parts and lungs (b) body parts and heart  
 (c) heart and body parts (d) lungs and heart
16. The upper two chambers of the heart are called .....  
 (a) aorta (b) auricles  
 (c) septa (d) ventricles
17. When light travels from glass to air, the incident angle is  $\theta_1$  and the refracted angle is  $\theta_2$ . True relation is-  
 (a)  $\theta_1 = \theta_2$  (b)  $\theta_1 < \theta_2$   
 (c)  $\theta_1 > \theta_2$  (d) Not predictable
18. Which of the following figures shows refraction of light while going from denser to rarer medium?

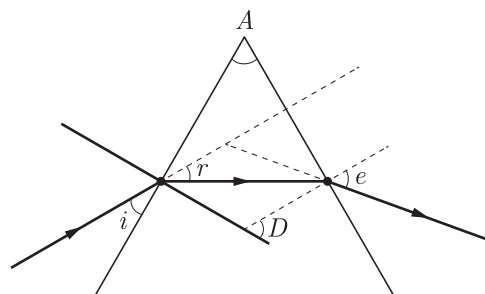


The correct equation for the given process is

- (a)  $6\text{CO}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$   
 (b)  $6\text{O}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2$   
 (c)  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} \longrightarrow 6\text{CO}_2 + 6\text{O}_2$   
 (d)  $6\text{CO}_2 + 6\text{O}_2 \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O}$
12. .... is an essential element used in the synthesis of proteins and other compounds in plants.  
 (a) Oxygen (b) Water  
 (c) Nitrogen (d) Carbon dioxide
13. All the sources of energy need to be broken down in the body and converted into:  
 (a) Uniform energy (b) Molecular energy  
 (c) Chemical reactions (d) Digestive process



19. A convex lens of focal length 20 cm is placed in contact with a concave lens of focal length 10 cm. The power of the combination is-
- (a) 10 dioptre (b) -10 dioptre  
(c) -5 dioptre (d) 5 dioptre
20. 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) Concave mirror, convex mirror, concave lens and convex lens
21. A watch shows time as 3.25. When seen through a mirror, the time will appear to be
- (a) 8.35 (b) 9.35  
(c) 7.35 (d) 8.25
22. A plane mirror produces a magnification of
- (a) 0 (b) -1  
(c) +1 (d) between 0 and +1
23. If a ray of light is incident on a plane mirror at an angle of  $30^\circ$ , then deviation produced by the plane mirror is
- (a)  $30^\circ$  (b)  $60^\circ$   
(c)  $90^\circ$  (d)  $120^\circ$
- 24.



Which of the following angles are correctly marked in the above diagram?

- (a)  $\angle A$ ,  $\angle r$  and  $\angle D$  (b)  $\angle A$  and  $\angle e$   
(c)  $\angle i$ ,  $\angle A$  and  $\angle D$  (d)  $\angle A$ ,  $\angle r$  and  $\angle e$

## 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. A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains
- (a) KCl (b) NaCl  
(c) HCl (d) LiCl
26. A student takes two test tube A and B and arrange the test tubes according to the figure:
- 
- Student takes about 0.5 g of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) in test tube A and about 0.5 g of sodium hydrogen carbonate ( $\text{NaHCO}_3$ ) in test tube B. After this student add about 2 ml of dilute HCl to both the test tubes.
- Which of following gas is evolved in the about experiment?
- (a) Carbon dioxide (b) Carbon monoxide  
(c) Oxygen (d) Carbon chloride
27. Which of the following is incorrect regarding to non-metals?
- (a) Non-metal are generally non lustrous and dull.  
(b) Non-metal are generally brittle.  
(c) Non-metals are generally soft.  
(d) Non-metal have high densities.
28. Which of the following when stretched, break into pieces?
- (a) Aluminium (b) Iron  
(c) Phosphorus (d) Calcium
29. A salt can be produced by reaction between
1. a weak acid and weak base.
  2. metal oxide and water.
  3. metal and a mineral acid.
  4. metal oxide and a mineral acid.
- (a) 1, 2 and 3 (b) 2, 3 and 4  
(c) 3, 4 and 1 (d) 4, 1 and 2
30. Which of the following non-metals is a liquid?
- (a) Carbon (b) Bromine  
(c) Phosphorus (d) Sulphur



**31. Assertion :** An arrangement of metals in decreasing order of their reactivity is called activity series.

**Reason :** Metals can be differentiated from non metals.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

**32. Assertion :** During digestion, carbohydrates are broken down to form glucose.

**Reason :** Glucose is necessary for breathing.

- (a) Both Assertion and Reason are True and Reason is the correct explanation of the Assertion.
- (b) Both Assertion and Reason are True but Reason is not the Correct explanation of the Assertion.
- (c) Assertion is True but the Reason is False.
- (d) Both Assertion and Reason are False.

**33. Assertion :** Aerobic animals are not truly aerobic.

**Reason :** Anaerobically they produce lactic acid.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

**34. Assertion :** A small source of light casts a sharp shadow of an opaque object.

**Reason :** Light travels in straight lines.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

**35.** A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains

- (a) NaCl
- (b) HCl
- (c) LiCl
- (d) KCl

**36.** Which of the following is(are) an endothermic process(es)?

1. Dilution of sulphuric acid
  2. Sublimation of dry ice
  3. Condensation of water vapours
  4. Evaporation of water
- (a) 1 and 3
  - (b) Only 2
  - (c) Only 3
  - (d) 2 and 4

**37.** What is the mode of nutrition in fungi?

- (a) Parasitic
- (b) Autotrophic
- (c) Heterotrophic
- (d) Saprophytic

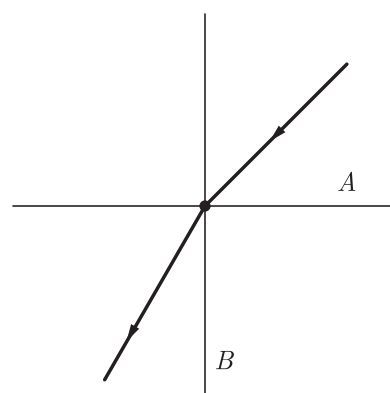
**38.** What is the name of the blood vessels that provide nutrition of the heart wall?

- (a) Pulmonary arteries
- (b) Pulmonary veins
- (c) Coronary arteries
- (d) Descending aorta

**39.** No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be-

- (a) Plane
- (b) Concave
- (c) Convex
- (d) Either plane or convex

**40.** A ray of light is refracted as per the following diagram. Which of the following medium is optically denser?



- (a) Medium A
- (b) Medium B
- (c) Cannot be identify
- (d) Both medium are denser

**41.** Which of the following structures is involved in gaseous exchange in woody stem of a plant?

- (a) Stomata
- (b) Guard cell
- (c) Lenticel
- (d) Epidermis

**42.** Contraction of auricles of the heart is called .....

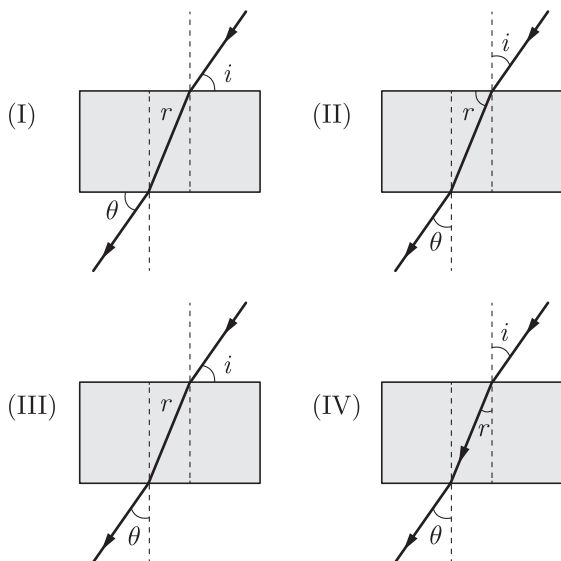
- (a) Systole
- (b) Diastole
- (c) Heart beat
- (d) Hypertension

**43.** The radius of curvature of concave mirror is 24 cm. Then, the focal length will be

- (a) -12 cm
- (b) 6 cm
- (c) -24 cm
- (d) -6 cm

**44.** The path of a ray of light passing through a rectangular glass slab was traced and angles measured. Which one out of the following is the correct representation of an angle of incidence  $i$ , angle of refraction  $r$  and angle of emergence  $e$  as shown in the diagrams?





- (a) I  
(c) III
- (b) II  
(d) IV

45. Which one of the following materials cannot be used to make a lens?  
(a) Water (b) Glass  
(c) Plastic (d) Clay
46. The laws of reflection hold good for:  
(a) plane mirror only  
(b) concave mirror only  
(c) convex mirror only  
(d) All mirrors irrespective of their shape.
47. A spherical mirror and a thin spherical lens each has a focal length of  $-15$  cm. The mirror and the lens are likely to be-  
(a) Both concave  
(b) Both convex  
(c) The mirror is concave and lens is convex  
(d) The mirror is convex, but the lens is concave
48. Non-metals are:  
(a) soft (b) brittle  
(c) hard (d) all of the above

## 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 Based Questions: (49-52)

The acids are sour in taste while bases are bitter in taste. Tasting a substance is not a good way of finding out if it is an acid or a base. Acids and bases can be better distinguished with the help of indicators. Indicators are substances that undergo a change of colour with a change of acidic, neutral or basic medium. Many of these indicators are derived from natural substances such as extracts from flower petals and barrier. Some indicators are prepared artificially. For example, methyl orange and phenolphthalein.

49. When a few drops of phenolphthalein is added to a solution having pH 8.5, then the colour  
(a) changes to blue  
(b) changes to red  
(c) changes to pink  
(d) does not change
50. The colour observed when methyl orange is added to an acid is  
(a) pinkish red  
(b) blue  
(c) orange  
(d) yellow

51. Which of the following statement(s) is incorrect about the litmus paper?  
(a) It is a most commonly used indicator.  
(b) In acidic solution, blue litmus paper turns red.  
(c) In neutral solution, no colour change is observed.  
(d) Litmus solution is a yellow dye, which is extracted from the lichen plant.
52. Which solution will change blue litmus to red?  
(a)  $\text{NaOH(aq)}$  (b)  $\text{NH}_4\text{OH(aq)}$   
(c)  $\text{KCl(aq)}$  (d)  $\text{H}_2\text{SO}_4\text{(aq)}$

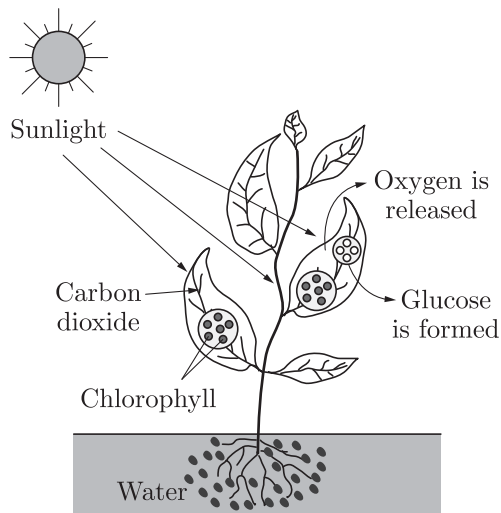
### Case Based Questions: (53-56)

Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis. It is the process by which autotrophs take in substances from the outside and convert them into stored forms of energy. This material is taken in the form of carbon dioxide and water which is converted into carbohydrates in the presence of sunlight and chlorophyll. Carbohydrates are utilised for providing energy to the plant. The carbohydrates which are not used immediately are stored in the form of starch, which serves as the internal energy reserve to be used as and when required by the plant. A somewhat

similar situation is seen in us where some of the energy derived from the food we eat is stored in our body in the form of glycogen. That means the complex substances have to be broken down into simpler ones before they can be used for the upkeep and growth of the body. To achieve this, organisms use biocatalysis.

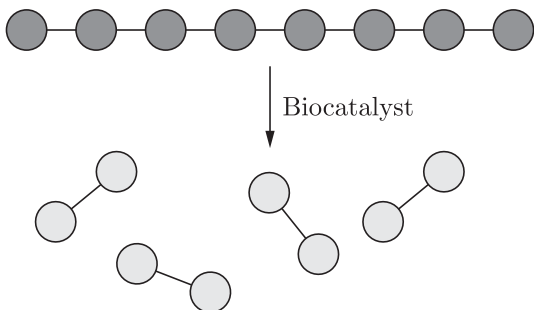
53. Heterotrophs depend for energy on
- autotrophs
  - producers
  - herbivores
  - both (a) and (b)

54. The picture given below represents how autotrophs take in substances from the outside and convert them into stored forms of energy.



The correct equation for the given process is

- $6\text{CO}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
  - $6\text{O}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2$
  - $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} \longrightarrow 6\text{CO}_2 + 6\text{O}_2$
  - $6\text{CO}_2 + 6\text{O}_2 \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O}$
55. Study the picture below that represents the mode of action of a biocatalyst.



Choose the correct combination of plots provided in the following table.

	Biocatalyst also termed as	Biocatalyst found in human saliva	Biocatalyst produced in human stomach
(a)	Enzymes	Amylase	Pepsin
(b)	Hormones	Amylase	Trypsin
(c)	Enzymes	Trypsin	Pepsin
(d)	Energy	Pepsin	Amylase

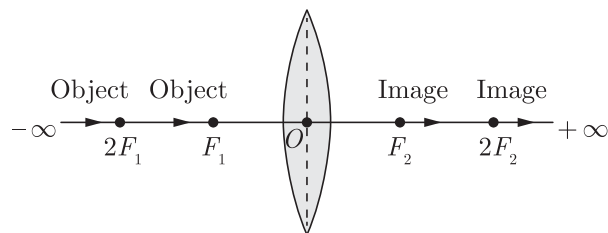
56. Which of the following statement (s) is (are) true?
- Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis.
  - Carbohydrates are utilised for providing energy to the plant.
  - Chlorophyll is essential for photosynthesis.
  - Autotrophs survival depends directly or indirectly on heterotrophs.
- I and II only
  - II and III only
  - I, II and III only
  - I, III and IV only

### Case Based Questions: (57-60)

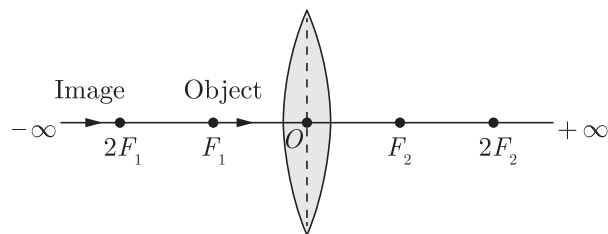
The image formed by a convex lens depends on the position of the object in front of the lens. When the object is placed anywhere between focus and infinity, the image formed by convex lens is real and inverted. The image is not obtained on the screen when the object is placed between focus and the lens.

The distance between the optical centre  $O$  of the convex lens and the focus point  $F_1$  or  $F_2$  is its focal length.

When the object shifts from  $-\infty$  to  $F_1$ , the image moves from  $F_2$  to  $+\infty$ .



When the object shifts from  $F_1$  to  $O$ , the image moves from  $-\infty$  to  $O$ .



A student did an experiment with a convex lens. He put an object at different distances from the lens. In each case he measured the distance of the image from the lens. The results were recorded in the following table

Object distance (in cm)	25	30	40	60	120
Image distance (in cm)	100	24	60	30	40

Unfortunately his results are written in the wrong order.

57. A virtual image is formed by convex lens when object is placed
- between  $F$  and  $O$
  - at infinity
  - between  $C$  and  $F$
  - at  $F$

58. The minimum distance between an object and its real image formed by a convex lens is
- (a) zero
  - (b)  $2f$
  - (c)  $4f$
  - (d)  $3f$
59. Which of this object distances gives the biggest image?
- (a) 60 cm
  - (b) 40 cm
  - (c) 30 cm
  - (d) 25 cm
60. The image distances in the correct order (in cm) is
- (a) 100, 60, 40, 30, 24
  - (b) 100, 60, 30, 40, 24
  - (c) 100, 24, 60, 40, 30
  - (d) 24, 30, 40, 60, 100





# SAMPLE PAPER - 9 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1.	(b)	Ch-1	118
2.	(b)	Ch-2	187
3.	(d)	Ch-3	101
4.	(d)	Ch-1	17
5.	(d)	Ch-2	9
6.	(b)	Ch-1	36
7.	(a)	Ch-1	90
8.	(b)	Ch-2	93
9.	(a)	Ch-2	74
10.	(a)	Ch-1	115
11.	(a)	Ch-4	284
12	(c)	Ch-4	40
13	(a)	Ch-4	8
14	(a)	Ch-4	86
15	(c)	Ch-4	87
16	(b)	Ch-4	88
17	(b)	Ch-5	79
18	(b)	Ch-5	107
19	(c)	Ch-5	105
20	(d)	Ch-5	128
21	(a)	Ch-5	130
22	(c)	Ch-5	154
23	(d)	Ch-5	155
24	(b)	Ch-6	45
25	(c)	Ch-2	153
26	(a)	Ch-2	174
27	(d)	Ch-3	123
28	(c)	Ch-3	13
29	(c)	Ch-2	51
30	(b)	Ch-3	81
31	(c)	Ch-3	146

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(c)	Ch-1	157
33	(a)	Ch-4	230
34	(a)	Ch-6	190
35	(b)	Ch-2	2
36	(d)	Ch-1	70
37	(d)	Ch-4	165
38	(c)	Ch-4	190
39	(d)	Ch-5	13
40	(b)	Ch-5	28
41	(c)	Ch-4	212
42	(a)	Ch-4	89
43	(a)	Ch-5	170
44	(d)	Ch-5	122
45	(d)	Ch-5	9
46	(d)	Ch-5	52
47	(a)	Ch-5	103
48	(b)	Ch-3	32
49	(c)	Ch-2	203
50	(a)	Ch-2	204
51	(d)	Ch-2	205
52	(d)	Ch-2	206
53	(d)	Ch-4	283
54	(a)	Ch-4	284
55	(a)	Ch-4	285
56	(c)	Ch-4	286
57	(a)	Ch-5	247
58	(c)	Ch-5	248
59	(d)	Ch-5	249
60	(a)	Ch-5	250