

**Sample/Pre-Board Paper 12**  
**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

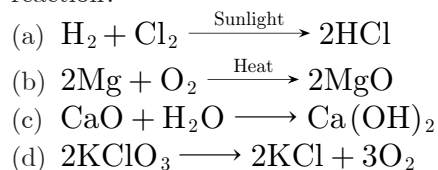
Section – A consists of 24 questions. Attempt any 20 questions from this section.  
The first attempted 20 questions would be evaluated.

1. Compound *A* on strong heating in a boiling tube gives off reddish brown fumes and a yellow residue. When the aqueous solution of *A* is treated with few drops of sodium hydroxide solution, a white precipitate appeared. Identify the cation and anion present in the compound *A*.  
(a) Copper(II) and nitrate  
(b) Lead(II) and chloride  
(c) Zinc and sulphate  
(d) Lead(II) and nitrate
2. 10 mL of HCl and 10 mL of NaOH solutions are contacted in two separate beakers, labelled I and II respectively. On adding zinc granules to both as shown in figure, it is observed that at room temperature.
3. Which of the following metals exist in their native state in nature?  
1. Cu  
2. Au  
3. Zn  
4. Ag  
(a) 1 and 2  
(b) 2 and 3  
(c) 2 and 4  
(d) 3 and 4

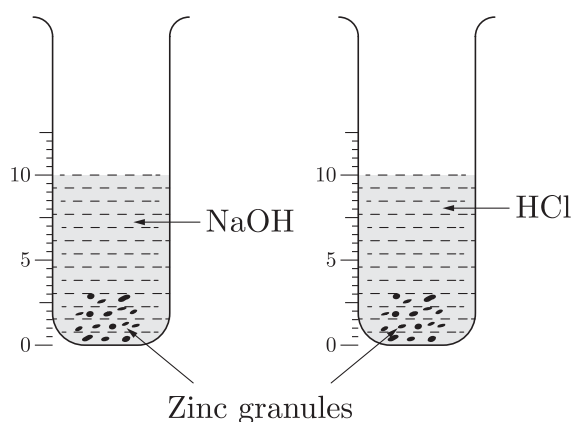
4. Select the type of following chemical reaction.  
 $2\text{H}_2\text{O}_2 \longrightarrow 2\text{H}_2 + \text{O}_2$   
(a) Decomposition  
(b) Combination  
(c) Synthesis  
(d) Displacement

5. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to  
(a) absorb the evolved gas  
(b) moisten the gas  
(c) absorb moisture from the gas  
(d) absorb  $\text{Cl}^-$  ions from the evolved gas.

6. Which one of the following is the decomposition reaction?



7. An integer precedes the formula of each substance; is known as ..... coefficients.  
(a) chemical  
(b) physical  
(c) stoichiometric  
(d) thermal



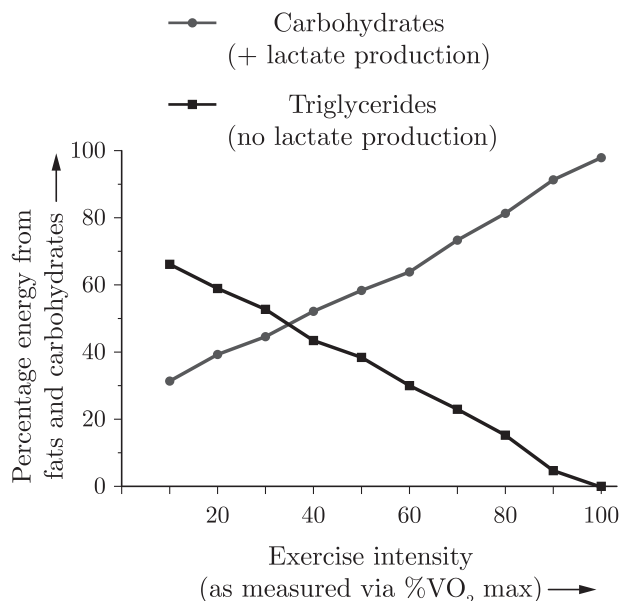
- (a) no gas is evolved in either of the two beakers.
- (b) gas is evolved in beaker II but not in beaker I.
- (c) gas is evolved vigorously in both.
- (d) gas is evolved vigorously in beaker I but not in beaker II.

8. .... is obtained by heating of gypsum.  
 (a) Bleaching powder (b) Plaster of paris  
 (c) Banking soda (d) Sodium hydroxide

9. Which of the following is not a base?  
 (a) NaCl (b) KOH  
 (c) ZnO (d)  $\text{Al}(\text{OH})_3$

10. The physical change is:  
 (a) melting of butter (b) burning of paper  
 (c) digestion of food (d) bursting of crackers

11. The given graph indicates the effect of exercise intensity on carbohydrate consumption.



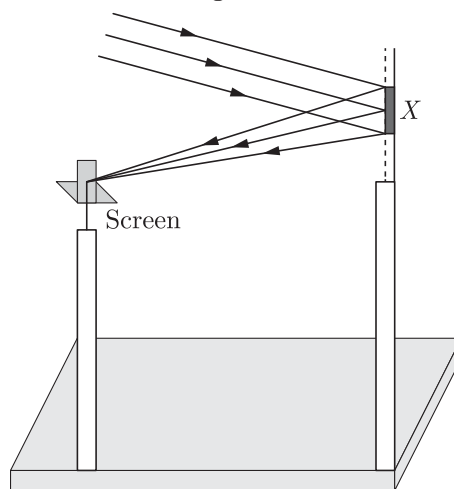
At high intensity of exercise

- (a) the anaerobic consumption of sugars increases  
 (b) the aerobic consumption of sugars increases  
 (c) the anaerobic consumption of sugars decreases  
 (d) no consumption of sugars takes place
12. The opening and closing of the leaf pores is a function of the  
 (a) Guard cells (b) Stomata  
 (c) Chloroplast (d) Vascular bundle
13. Due to the complexities of carbon sources, different organism use:  
 (a) Different kinds of nutritional processes  
 (b) Different kind of growing processes  
 (c) Different kind of metabolism  
 (d) Different kind of cell structure
14. What type of tissue is blood?  
 (a) muscle tissue (b) nervous tissue  
 (c) fluid connective tissue (d) epithelial tissue
15. Oxygen is carried by the ..... cells.  
 (a) white blood cells (b) red blood cells  
 (c) muscle cells (d) nerve cells

16. Which of the following helps in maximum transport of oxygen?  
 (a) Red blood corpuscles  
 (b) Platelets  
 (c) Plasma  
 (d) White blood corpuscles

17. A beam of light propagating in medium A with index of reflection  $n(A)$  passes across an interface into medium B with index of refraction  $n(B)$ . The angle of incidence is greater than the angle of refraction;  $v(A)$  and  $v(B)$  denotes the speed of light in A and B. Then which of the following is true  
 (a)  $v(A) > v(B)$  and  $n(A) > n(B)$   
 (b)  $v(A) > v(B)$  and  $n(A) < n(B)$   
 (c)  $v(A) < v(B)$  and  $n(A) > n(B)$   
 (d)  $v(A) < v(B)$  and  $n(A) < n(B)$

18. A student determines the focal length of a device X, by focusing the image of a far off object on the screen positioned as shown in figure The device X is a



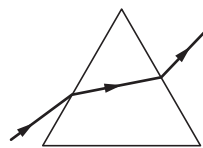
- (a) Convex lens (b) Concave lens  
 (c) Convex mirror (d) Concave mirror

19. SI unit of radius of curvature of a concave mirror is  
 (a)  $-m$  (b)  $m^{-1}$   
 (c)  $m$  (d) None of these

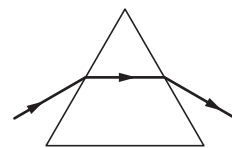
20. Does the focal length of a lens change on changing the object distance?  
 (a) Yes, always (b) Yes, sometimes  
 (c) No, never (d) Cannot say

21. A student obtains a blurred image of an object on a screen by using a convex lens. In order to obtain a sharp image of the same object on the screen, he will have to shift the lens  
 (a) to a position very far away from the screen.  
 (b) little away from the screen.  
 (c) towards the screen.  
 (d) either towards or away from the screen depending upon the position of the object.

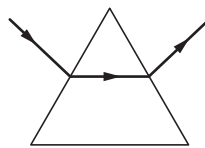
22. The velocity of light is maximum in a medium of  
 (a) glass (b) water  
 (c) vacuum (d) diamond
23. A man runs towards a mirror with a speed of  $15 \text{ m-s}^{-1}$ . What is the speed of his image ?  
 (a)  $7.5 \text{ m-s}^{-1}$  (b)  $15 \text{ m-s}^{-1}$   
 (c)  $30 \text{ m-s}^{-1}$  (d)  $45 \text{ m-s}^{-1}$
24. In which of the following diagrams is the path of a ray of light passing through a glass prism shown correctly?



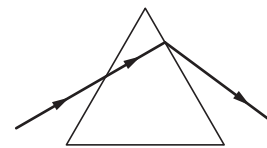
(I)



(II)



(III)



(IV)

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

## 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 organic acid present in tomato is  
 (a) oxalic acid (b) lactic acid  
 (c) malic acid (d) tartaric acid
26. The pH of a solution is 6. Its hydrogen ion concentration is decreased by 100 times, the solution will be :  
 (a) more acidic (b) basic  
 (c) neutral (d) unaffected
27. Which of the following metal have low density?  
 (a) Iridium (b) Osmium  
 (c) Lithium (d) None of these
28. Which of the following element is non-malleable?  
 (a) C (b) Al  
 (c) Ag (d) Au
29. On washing with soap, a turmeric stain on the cloth turns to red because  
 1. Soap solution is alkaline.  
 2. Soap solution is acidic.  
 3. Turmeric contains a natural indicator.  
 4. Turmeric contains litmus.
- Select the correct alternative.  
 (a) 1 and 3 (b) 2 and 4  
 (c) 3 and 2 (d) 1 and 4
30. Although metals form basic oxides, which of the following metals form an amphoteric oxide?  
 (a) Na (b) Ca  
 (c) Al (d) Cu
31. **Assertion** : Sodium displaces copper from its salt solution.  
**Reason** : Reactive metals can displace less reactive metals from their compounds in solution as molten form.  
 (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** : Chips manufacturers usually flush bags of chips with oxygen gas.  
**Reason** : It adds taste to chips.  
 (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** : The thickest muscles are present in left atrium.  
**Reason** : Left atrium receives deoxygenated blood from the lungs.  
 (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 :** Power of a convex lens is positive and that of a concave lens is negative.

**Reason :** Convex lens forms real image and concave lens forms virtual image.

- (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. Which of the following are correctly matched?

1.	Acid + salt	metal + hydrogen
2.	Acid + metal carbonate	salt + carbon dioxide + water
3.	Metal oxide + acid	salt + water

- (a) 1 and 2
- (b) 2 and 3
- (c) 1 and 3
- (d) 1, 2 and 3

36. Which among the following statement(s) is(are) true? Exposure of silver chloride to sunlight for a long duration turns grey due to

- 1. the formation of silver by decomposition of silver chloride.
- 2. sublimation of silver chloride.
- 3. decomposition of chlorine gas from silver chloride.
- 4. oxidation of silver chloride.

- (a) Only 1
- (b) 1 and 3
- (c) 2 and 3
- (d) Only 4

37. Many-plant waste products are stored in:

- (a) Chloroplast
- (b) Mitochondria
- (c) Cellular vacuoles
- (d) Cytoplasm

38. The blood vessel that begins and ends in capillaries?

- (a) Renal vein
- (b) Renal artery
- (c) Hepatic artery
- (d) Hepatic portal vein

39. Where should an object is placed in front of a convex lens to get a real image of the size of the object?

- (a) At the principal focus of the lens
- (b) At twice the focal length
- (c) At infinity
- (d) Between the optical centre of the lens and its principal focus.

40. An object is kept in front of a concave mirror of focal length 20 cm. The image is three times the size of the object. The possible distances of the object from the mirror is-

- (a)  $-\frac{80}{3}$
- (b)  $-\frac{40}{3}$

- (c)  $-\frac{50}{3}$
- (d)  $-\frac{10}{3}$

41. The function of the glomerulus and Bowman's capsule of the nephron is to?

- (a) Reabsorb water into the blood
- (b) Eliminate ammonia from the body
- (c) Reabsorb salts and amino acids
- (d) Filter the blood and capture the filtrate

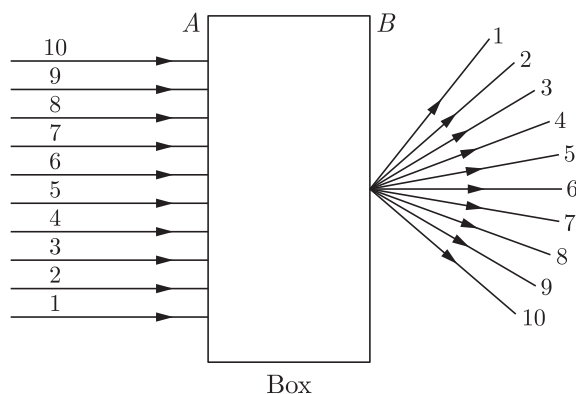
42. In higher vertebrates, systemic circulation takes place between .....

- (a) body parts and lungs
- (b) body parts and heart
- (c) heart and body parts
- (d) lungs and heart

43. The projection lens of a projector has focal length 5 cm. It is desired to get an image with a magnification 30. The distance of the screen from the lens must be

- (a) 0.3 m
- (b) 0.8 m
- (c) 1.55 m
- (d) 2.55 m

44. A beam of light is incident through the holes on side A and emerges out of the holes on the other face of the box as shown in figure. Which of the following could be inside the box?

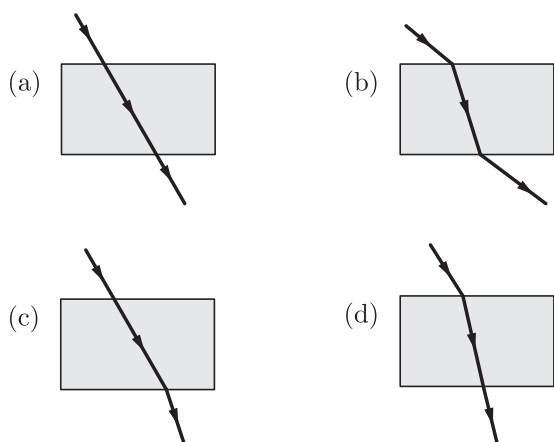


- (a) Concave lens
- (b) Rectangular glass slab
- (c) Prism
- (d) Convex lens

45. A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object?

- (a) 0.25 m
- (b) 0.30 m
- (c) 0.35 m
- (d) 0.40 m

46. The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown in figure. Which one of them is correct?



47. Where should an object be placed in front of a convex lens to get a real image of the size of the object?
- At the principle focus of the lens
  - At twice focal length
  - At infinity
  - Between the optical centre of the lens and its principle focus
48. What happens when calcium is treated with water?
- It does not react with water.
  - It reacts violently with water.
  - It reacts less violently with water.
  - Bubbles of hydrogen gas formed stick to the surface of calcium.
- 1 and 4
  - 2 and 3
  - 1 and 2
  - 3 and 4

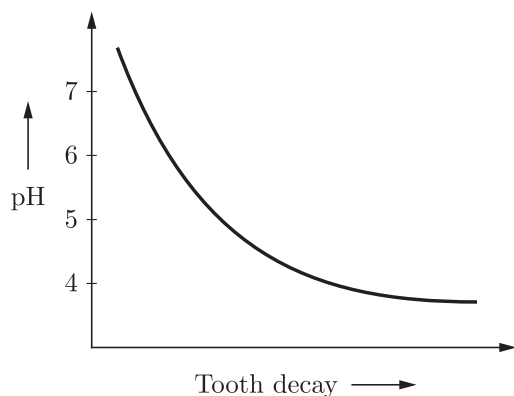
## Section C

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)

Tooth decay starts when the pH of the mouth is lower than 5.5. Tooth enamel, made up of calcium phosphate is the hardest substance in the body. It does not dissolve in water, but is corroded when the pH in the mouth is below 5.5. Bacteria present in the mouth produce acids by degradation of sugar and food particles remaining in the mouth after eating. The best way to prevent this is to clean the mouth after eating food. Using toothpastes, which are generally basic, for cleaning the teeth can neutralise the excess acid and prevent tooth decay.



49. The tooth decay be prevented:
- By rinsing mouth with excess of water after eating.
  - By using basic toothpaste.
  - Both (a) and (b)
  - Preventing use of acidic substances like lemon etc.

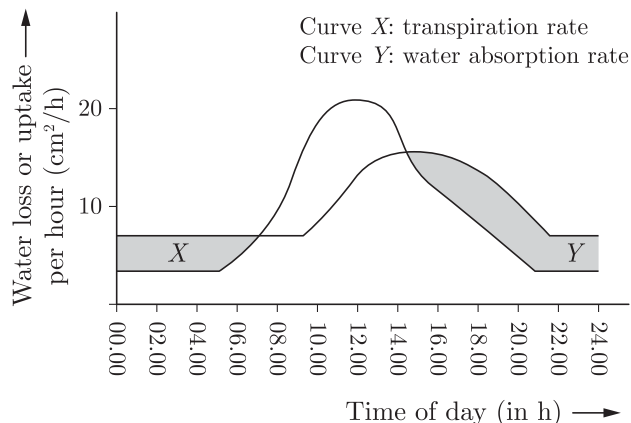
50. Teeth enamel is made of a substance called:
- Aluminium
  - Calcium phosphate
  - Iron
  - Diamond
51. Tooth decay in the mouth starts when:
- pH of mouth is below 5.5
  - pH of mouth is 7.6
  - pH of mouth is 7.5
  - pH of mouth is 7
52. The acidity in the mouth is due to:
- Undigestion of food.
  - Degradation of sugar and food particles remaining in mouth by bacteria.
  - Drinkin8g of Mosambi juice.
  - Eating of acidic substances like tomatoes, orange etc.

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

Plants have low energy needs and can use relatively slow transport systems. The distances over which transport systems have to operate, however, can be very large in plants such as very tall trees. Plant transport systems move energy stores from leaves and raw materials from roots. These two pathways are constructed as independently organised conducting tubes.

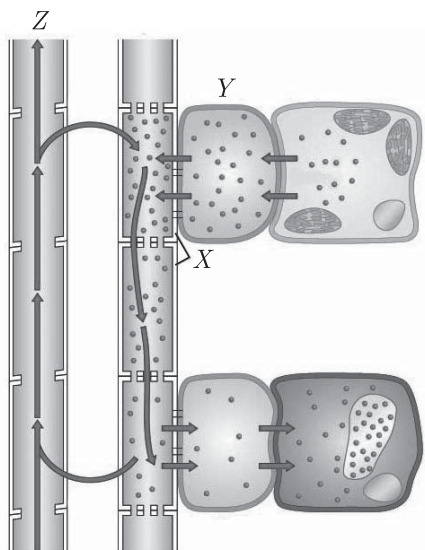
53. Force of cohesion develops due to
- attraction between similar molecules
  - attraction between different molecules
  - attraction between xylem and phloem
  - attraction between xylem and water

54. Given graph shows the rates of water absorption and transpiration of a plant during a 24-hour period.



The difference between the rates of transpiration and water absorption between 00:00 and 06:00 hours is due to:

- The rate of absorption fell behind the rate of transpiration during the day, but exceeded it at night.
  - Rate of absorption is always higher than rate of transpiration.
  - Rate of absorption is always equal to rate of transpiration.
  - The rate of absorption is higher than the rate of transpiration during the day, but decreases at night.
55. The given figure represents the movement of water and minerals in xylem and movement of food in phloem.



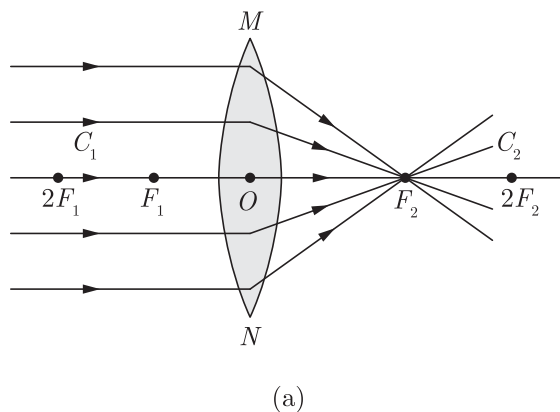
Choose the correct combination of plots provided in the following table:

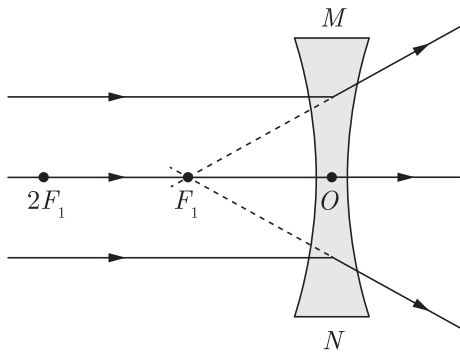
	X	Y	Z
(a)	Major conducting cells in xylem	Denucleated	Flow is bidirectional
(b)	Major conducting cells in phloem	Nucleated	Flow is unidirectional
(c)	Major conducting cells in xylem and phloem	Denucleated	Flow is unidirectional
(d)	Cells of xylem but function is not defined	Nucleated	Flow is bidirectional

56. Which of the following statement(s) is (are) true about transport in plants?
- Beside water, xylem also transports amino acids and other substances.
  - The translocation in phloem is achieved by utilising energy.
  - Transpiration helps in the absorption.
  - This transport of soluble products of photosynthesis occurs in phloem.
- I and II only
  - II, III and IV only
  - I, II and III only
  - I, III and IV only

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

Lenses are made of transparent material usually glass, bounded by polished spherical or cylindrical surface. This means that a lens is bound by at least one spherical surface. In such lenses, the other surface would be plane. A lens which is thicker at the middle and thinner at the edge is convex lens. It is also called converging lens. A convex lens is of three types. i.e., biconvex, planoconvex and convexo-concave lens. Similarly, a double concave lens is bounded by two spherical surfaces, curved inwards. It is thicker at the edges than at the middle. Such lenses diverge light rays. Such lenses are called diverging lenses. A double concave lens is simply called a concave lens.



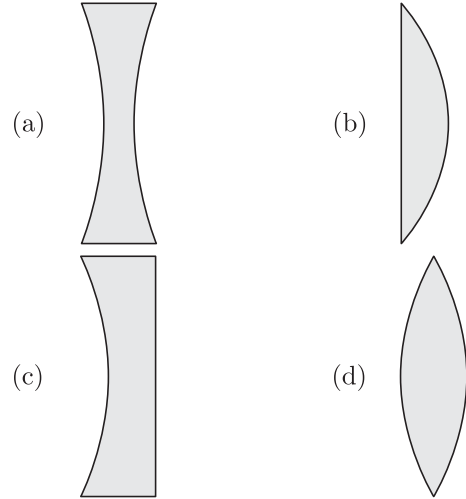


(b)

57. The lens which is also called a diverging lens is:
- (a) Plano-convex lens      (b) Convex lens  
 (c) Concave lens          (d) Plano-concave lens
58. Which of the following difference is correct between a convex lens and a concave lens?
- (a) A convex lens forms both real and virtual images while a concave lens forms only virtual images.  
 (b) A convex lens is a converging lens while a concave lens is a diverging lens.  
 (c) A convex lens is thick at the middle and thin at the edges while a concave lens is thin at the middle and thick at the edges.  
 (d) All of the above

59. A transparent medium bounded by two surfaces, atleast one of them is spherical is called a:
- (a) Lens                              (b) Telescope  
 (c) Convex mirror                  (d) Concave mirror

60. Which of the following lens is a diverging lens?



- (a) Lens a                              (b) Lens b  
 (c) Lens c                              (d) Lens d

## SAMPLE PAPER - 7 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(d)	Ch-1	82
2	(d)	Ch-2	184
3	(c)	Ch-3	62
4	(a)	Ch-1	12
5	(c)	Ch-2	7
6	(d)	Ch-1	92
7	(c)	Ch-1	88
8	(b)	Ch-2	91
9	(a)	Ch-2	70
10	(a)	Ch-1	113
11	(a)	Ch-4	279
12	(a)	Ch-4	38
13	(a)	Ch-4	6
14	(c)	Ch-4	79
15	(b)	Ch-4	81
16	(a)	Ch-4	82
17	(b)	Ch-5	76
18	(d)	Ch-5	104
19	(c)	Ch-5	100
20	(c)	Ch-5	114
21	(d)	Ch-5	117
22	(c)	Ch-5	150
23	(b)	Ch-5	151
24	(b)	Ch-6	43
25	(a)	Ch-2	144
26	(b)	Ch-2	149
27	(c)	Ch-3	120
28	(a)	Ch-3	10
29	(a)	Ch-2	45
30	(c)	Ch-3	78
31	(a)	Ch-3	144

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(d)	Ch-1	155
33	(d)	Ch-4	228
34	(c)	Ch-6	188
35	(b)	Ch-2	37
36	(a)	Ch-1	66
37	(c)	Ch-4	163
38	(b)	Ch-4	188
39	(b)	Ch-5	11
40	(a)	Ch-5	26
41	(d)	Ch-4	204
42	(c)	Ch-4	87
43	(c)	Ch-5	168
44	(d)	Ch-5	127
45	(a)	Ch-5	7
46	(b)	Ch-5	54
47	(b)	Ch-5	101
48	(d)	Ch-3	30
49	(c)	Ch-2	193
50	(b)	Ch-2	194
51	(a)	Ch-2	195
52	(b)	Ch-2	196
53	(a)	Ch-4	273
54	(a)	Ch-4	274
55	(b)	Ch-4	275
56	(b)	Ch-4	276
57	(c)	Ch-5	237
58	(d)	Ch-5	238
59	(a)	Ch-5	239
60	(a)	Ch-5	240