Sample/Pre-Board Paper 27

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

(a) $H_2(g) + O_2(g) \longrightarrow 2H_2O(l)$

(b) $H_2(l) + O_2(l) \longrightarrow 2H_2O(g)$

(c) $H_2(g) + O_2(l) \longrightarrow 2H_2O(l)$

(d) $H_2(g) + O_2(g) \longrightarrow 2H_2O(g)$

2. A student require hard water for an experiment in his laboratory which is not available in the neighbouring area. In the laboratory there are some salts, which when dissolved in distilled water can convert it into hard water. Select from the following groups of salts, a group, each salt of which when dissolved in distilled water will make it hard.

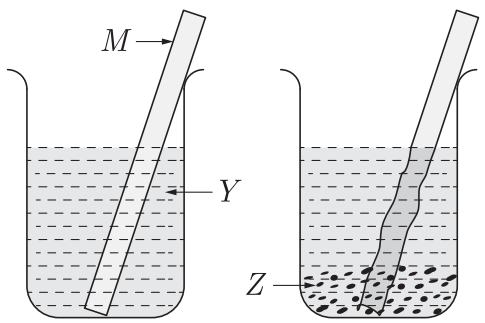
(a) Sodium chloride, Potassium chloride

(b) Sodium sulphate, Potassium sulphate

(c) Sodium sulphate, Calcium sulphate

(d) Calcium sulphate, Calcium chloride

3. A metal rod (M) was dipped in a coloured solution (Y). After some time it was observed that the metal rod starts dissolving in the solution and the solution starts fading in colour. However, a coloured precipitate $(Z)(Z)$ was seen at the bottom of the beaker. (M), (Y) and (Z) could be



(a) $M = Zn$ $Y = FeSO_4$ $Z = Fe$

(b) $M = Cu$ $Y = Al_2(SO_4)_3$ $Z = Al$

(c) $M = Ag$ $Y = CuSO_4$ $Z = Cu$

(d) $M = Fe$ $Y = ZnSO_4$ $Z = Zn$

4. Which of the following is not a chemical reaction?

(a) Souring of milk

(b) Dissolution of sugar in water

(c) Rusting of iron

(d) Digestion of food in the body

5. Which of the following statements is true for acids?

(a) Bitter and change red litmus to blue

(b) Sour and change red litmus to blue

(c) Sour and change blue litmus to red

(d) Bitter and change blue litmus to red

6. Which of the following is not a balanced equation?

(a) $Ca(HO)_2 + CO_2 \longrightarrow CaCO_3 + H_2O$

(b) $Fe + CuSO_4 \longrightarrow FeSO_4 + Cu$

(c) $KClO_4 \xrightarrow{\Delta} KCl + 2O_2$

(d) $Cu + 2HNO_3 \longrightarrow Cu(NO_3)_2 + 2NO_2 + H_2O$

7. The reaction between nitrogen and hydrogen to give ammonia is an example of

(a) decomposition reaction

(b) displacement reaction

(c) combination reaction

(d) oxidation

8. In an experiment of pH paper four students takes the following observation?

Student	Sample	pH paper colour
A	Water	Blue
B	Dilute HCl	Red
C	Dilute NaOH	Blue
D	Dilute Ethanoic acid	Orange

Which student takes the incorrect observation?
(a) B (b) C
(c) D (d) A

9. Which of the following property is incorrect for acid?
(a) Acid have sour taste.
(b) Acid are corrosive to metals.
(c) Acid change red litmus paper to blue.
(d) Acid become less acidic on mixing with bases.

10. Which of the following is/are correct for a balanced chemical equation?
1. It is based on law of conservation of mass.
2. The physical states makes the chemical reaction less informative.

(a) Only 1 (b) Only 2
(c) Both 1 and 2 (d) Neither 1 nor 2

11. Example of some organisms which derive nutrition from plants or animals without killing them
(a) Cuscuta (b) Ticks
(c) Leeches (d) All of the above

12. The enzyme that break down starch into simpler form is known as
(a) Salivary amylase (b) Lipase
(c) Maltase (d) Trypsin

13. The heterotrophs survival depends directly or indirectly on:
(a) Surroundings
(b) Ecology and surrounding
(c) Autotrophs
(c) Molecular structure

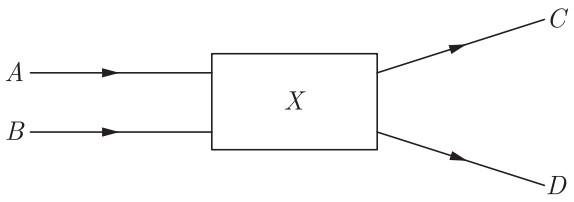
14. Vitamin ..... helps in blood clotting.
(a) Vitamin A2 (b) Vitamin B
(c) Vitamin E4 (d) Vitamin K

15. Which of the following parts of plants is the storehouse of energy?
(a) Flowers (b) Branches
(c) Roots (d) all of these

16. The excretory unit of the human excretory system is known as?
(a) Nephridia (b) Neuron
(c) Nephron (d) kidneys

17. The angle between incident ray and reflected ray is 60°. What is the angle of incidence?
(a) 30° (b) 40°
(c) 60° (d) 50°

18. Light rays A and B fall on optical component X and come out as C and D.



The optical component is a
(a) concave lens (b) convex lens
(c) convex mirror (d) prism

19. The refractive index of a medium 'x' with respect to 'y' is $\frac{2}{3}$ and the refractive index of medium 'y' with respect to 'z' is $\frac{4}{3}$. The refractive index of medium 'z' with respect of 'x' is-
(a) $\frac{2}{9}$ (b) $\frac{9}{8}$
(c) $\frac{1}{3}$ (d) $\frac{5}{6}$

20. For the same angle of incidence in media P, Q and R, the angles of refraction are 45°, 35° and 15° respectively. In which medium will the velocity of light be minimum?
(a) P (b) Q
(c) R (d) Q and R

21. When light enters from air to glass, the angles of incidence and refraction in air and glass are 45° and 30° respectively. The refractive index of glass is (Given that $\sin 45^\circ = \frac{1}{\sqrt{2}}$, $\sin 30^\circ = \frac{1}{2}$)
(a) 1.90 (b) 1.41
(c) 1.20 (d) 1.55

22. Mirror made by silvering the inner surface of the piece of a hollow sphere is:
(a) convex mirror (b) concave mirror
(c) both (a) and (b) (d) none of these

23. Identify which of the following mirrors converge the parallel light rays to its focus ?
(a) Plane (b) Convex
(c) Concave (d) Inverted

24. To an astronaut, the sky appears
(a) blue (b) red
(c) white (d) dark

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. When acidified potassium dichromate solution is added to a jar containing sulphur dioxide gas, the solution becomes:
(a) colourless (b) brown
(c) dark orange (d) green

26. Arrange the following acids on their basicity in the table:
A = HCl, B = HNO_3, C = H_3PO_4

	Type of acid	Acid
1.	Monobasic	
2.	Dibasic	
3.	Tribasic	

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

27. What happens when calcium is treated with water?
1. It does not react with water.
2. It reach violently with water.
3. It reacts less violently with water.
4. Bubbles of hydrogen gas formed stick to the surface of calcium.

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

28. Which of the following conducts electricity?
(a) Molten NaCl
(b) Molten sulphur
(c) Crystalline NaCl
(d) Diamond

29. The hydroxyl ion concentration of a solution is 1.0×10^{-9} M. The pH of the solution is:
(a) 4
(b) 5
(c) 6
(d) 7

30. Which of the following metal displace hydrogen from dilute acid?
(a) Zinc
(b) Magnesium
(c) Copper
(d) Sodium

31. **Assertion :** Salts of strong acids and weak bases are basic in nature.
Reason : pH value of such salt are mare than 7.
(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.

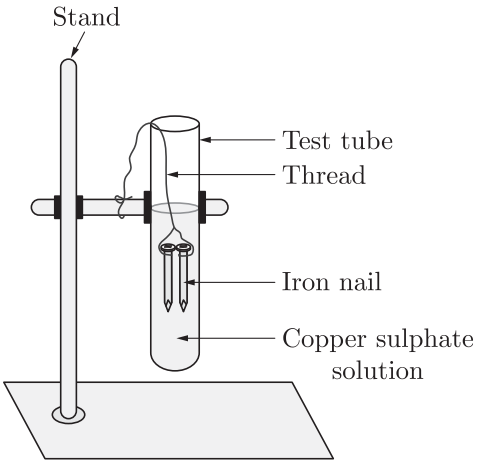
32. **Assertion :** Photosynthesis is considered as an endothermic reaction.
Reason : Energy gets released in the process of photosynthesis.
(a) Both Assertion and Reason are True and Reason is the correct explanation of the Assertion.
(b) Both Assertion and Reason are True but Reason is not the Correct explanation of the Assertion.
(c) Assertion is True but the Reason is False.
(d) Both Assertion and Reason are False.

33. **Assertion :** All the plants possess autotrophic mode of nutrition.
Reason : Due to the presence of green coloured pigment chlorophyll in them.
(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 :** Sun is visible to us 2 minutes after the actual sunrise and about 2 minutes before the actual sunset.
Reason : It is caused due to rotation and revolution of earth.
(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 statements is true for acids?
(a) Bitter and change red litmus to blue
(b) Sour and change red litmus to blue
(c) Sour and change blue litmus to red
(d) Bitter and change blue litmus to red

36. One day Mohan was performing an experiment in the laboratory. By mistake he left the iron mail in the copper sulphate solution for one week.



After one week, the colour of sulphate solution is:

(a) Green (b) Yellow

(c) Red (d) Colourless

37. Which one of the following is attached to the right ventricle?

(a) Pulmonary artery (b) Pulmonary vein

(c) Inferior vena cava (d) Superior vena cava

38. What happens if a person has one kidney removed?

(a) They will accumulate excess urea

(b) They will die

(c) They will continue as normal

(d) They will stop making urine

39. As light travels from a rarer to a denser medium it will have

(a) increased velocity (b) decreased velocity

(c) decreased wavelength (d) both (b) and (c)

40. Which of the following are correctly matched for the concave mirror?

	Object	**Image**
1.	Between P and F	at infinity
2.	At C	at C
3.	Beyond C	between F and C
4.	At infinity	at focus

Choose the correct option from the codes given below :

(a) 1, 3, 4 (b) 2, 3, 4

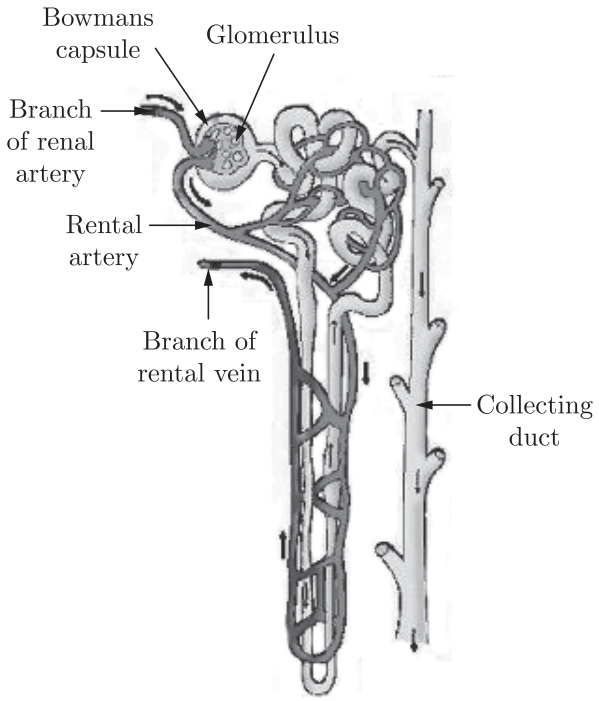
(c) 1, 2, 3 (d) 1, 2, 3, 4

41. The ..... moves water and minerals obtained from the soil.

(a) phloem (b) xylem

(c) parenchyma (d) collenchyma

42. The given diagram is the structure of a/an-

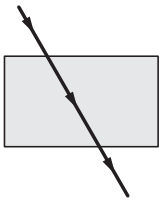


(a) Alimentary canal (b) Respiratory tract

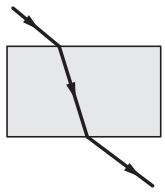
(c) Nephron (d) Small intestine

43. 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?

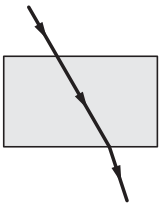
(a)



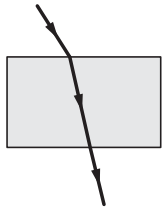
(b)



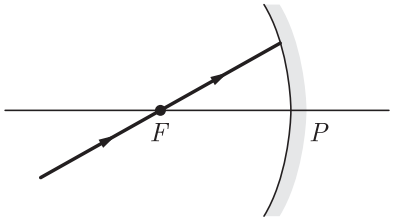
(c)



(d)

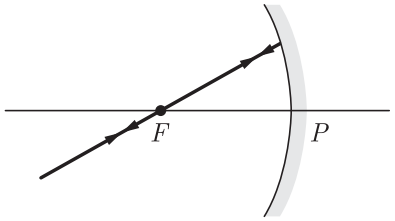


44. An incident ray strikes a concave mirror after passing through the focus (F) as shown in the figure.

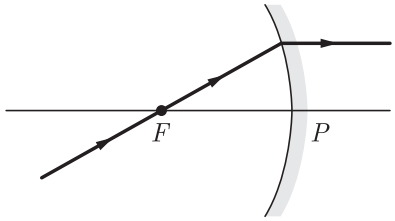


Which of the following shows the correct path of reflected rays?

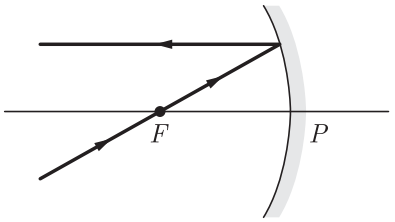
(a)



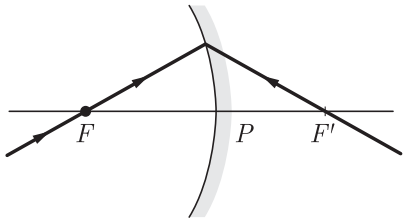
(b)



(c)



(d)



45. When an incident ray makes an angle of 40° with a normal to the air glass interface of the rectangular glass slab. The value of angle of emergence is-

(a) 30° (b) 60°
(c) 90° (d) 40°

46. If the speed of light in vacuum is $3 \times 10^8\,\text{m/s}$, the absolute refractive index of a medium in which light travels with a speed of $1.4 \times 10^8\,\text{m/s}$ is

(a) 2.14 (b) 3.14
(c) 4.15 (d) 1.14

47. The rays from the sun converge at a point 25 cm in front of a concave mirror. Where should an object be kept so that size of its image is equal to size of the object?

(a) 12.5 cm in front of the mirror
(b) 25 cm in front of the mirror
(c) 50 cm in front of the mirror
(d) between 25 cm and 30 cm in front of the mirror

48. During the formation of ionic bond _____ transfer takes place from one atom to the others.

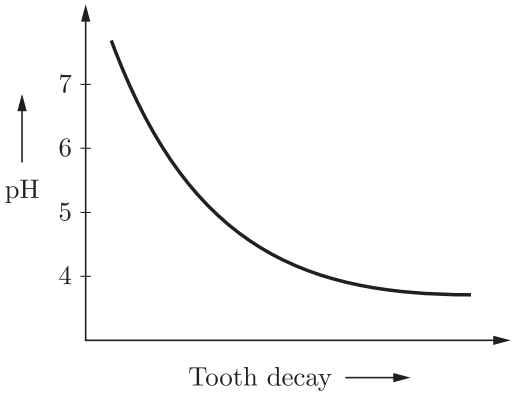
(a) electron (b) proton
(c) neutron (d) None of the above

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)

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:
(a) By rinsing mouth with excess of water after eating.
(b) By using basic toothpaste.
(c) Both (a) and (b)
(d) Preventing use of acidic substances like lemon etc.

50. Teeth enamel is made of a substance called:
(a) Aluminium (b) Calcium phosphate
(c) Iron (d) Diamond

51. Tooth decay in the mouth starts when:
(a) pH of mouth is below 5.5
(b) pH of mouth is 7.6
(c) pH of mouth is 7.5
(d) pH of mouth is 7

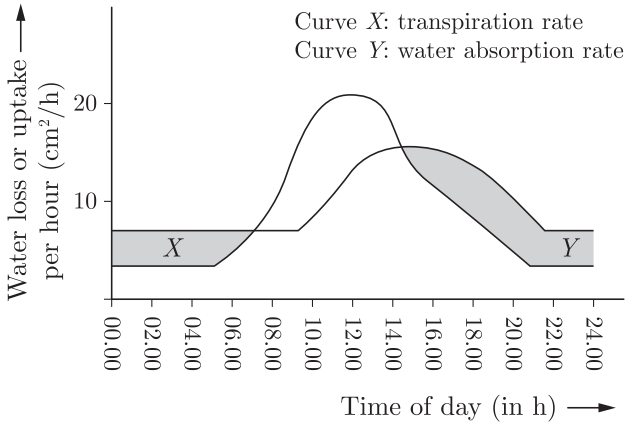
52. The acidity in the mouth is due to:
(a) Undigestion of food.
(b) Degradation of sugar and food particles remaining in mouth by bacteria.
(c) Drinkin8g of Mosambi juice.
(d) Eating of acidic substances like tomatoes, orange etc.

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.

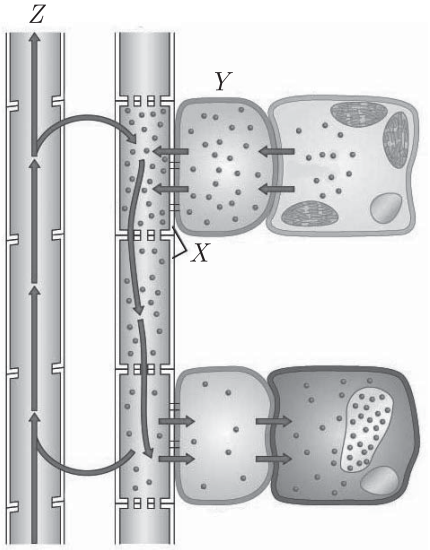
53. Force of cohesion develops due to
(a) attraction between similar molecules
(b) attraction between different molecules
(c) attraction between xylem and phloem
(d) attraction between xylem and water

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:
(a) The rate of absorption fell behind the rate of transpiration during the day, but exceeded it at night.
(b) Rate of absorption is always higher than rate of transpiration.
(c) Rate of absorption is always equal to rate of transpiration.
(d) 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:

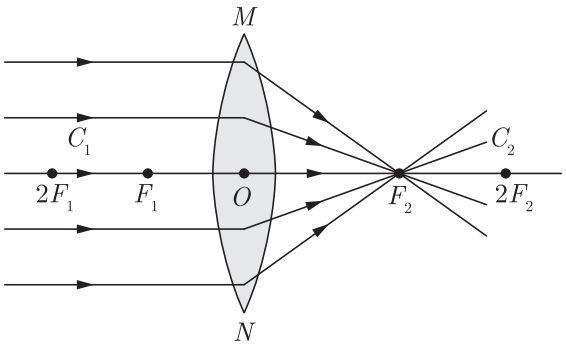
	X	*Y*	*Z*
(a)	Major conducting cells in xylem	Denucleated	Flow is bidirectional
(b)	Major conducting cells in phloem	Nucleated	Flow is unidirectional
(c)	Major conducting cells in xylem and phloem	Denucleated	Flow is unidirectional
(d)	Cells of xylem but function is not defined	Nucleated	Flow is bidirectional

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

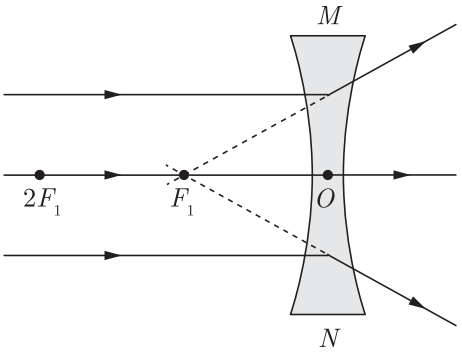
(a) I and II only (b) II, III and IV only
(c) I, II and III only (d) I, III and IV only

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 thickes at the middle and thinner at the edge is convex lens. Is also called converging lens. A convex lens is of there 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



(a)



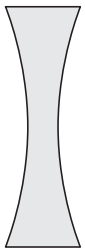
(b)

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

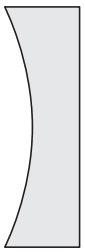
58. Which of the following difference is correct between a convex lens and a concave lens?
(a) A convex lens forms both real and virtual images while a concave lens forms only virtual images.
(b) A convex lens is a converging lens while a concave lens is a diverging lens.
(c) A convex lens is thick at 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) 

(b) 

(c) 

(d) 

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

SAMPLE PAPER - 22 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(a)	Ch-1	5
2	(d)	Ch-2	107
3	(a)	Ch-3	134
4	(b)	Ch-1	42
5	(c)	Ch-2	32
6	(d)	Ch-1	124
7	(c)	Ch-1	25
8	(d)	Ch-2	79
9	(c)	Ch-2	121
10	(a)	Ch-1	131
11	(d)	Ch-4	220
12	(a)	Ch-4	54
13	(c)	Ch-4	21
14	(d)	Ch-4	126
15	(d)	Ch-4	127
16	(c)	Ch-4	128
17	(a)	Ch-5	21
18	(a)	Ch-5	177
19	(b)	Ch-5	31
20	(c)	Ch-5	32
21	(b)	Ch-5	33
22	(a)	Ch-5	New
23	(c)	Ch-5	New
24	(d)	Ch-6	13
25	(d)	Ch-2	105
26	(a)	Ch-2	125
27	(d)	Ch-3	57
28	(a)	Ch-3	37
29	(b)	Ch-2	138
30	(a)	Ch-3	94
31	(d)	Ch-2	160

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(c)	Ch-1	166
33	(a)	Ch-4	222
34	(d)	Ch-6	60
35	(c)	Ch-2	32
36	(a)	Ch-1	175
37	(a)	Ch-4	109
38	(c)	Ch-4	124
39	(d)	Ch-5	48
40	(b)	Ch-5	47
41	(b)	Ch-4	139
42	(c)	Ch-4	155
43	(b)	Ch-5	54
44	(c)	Ch-5	98
45	(d)	Ch-5	22
46	(a)	Ch-5	39
47	(c)	Ch-5	86
48	(a)	Ch-3	57
49	(c)	Ch-3	193
50	(b)	Ch-3	194
51	(a)	Ch-3	195
52	(b)	Ch-3	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