Sample Paper

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1	(d)	7	(a)	13	(a)	19	(a)	25	(a)	31	(a)	37	(d)	43	(d)	49	(c)	55	(c)
2	(d)	8	(d)	14	(a)	20	(a)	26	(d)	32	(b)	38	(a)	44	(a)	50	(c)	56	(a)
3	(d)	9	(c)	15	(b)	21	(d)	27	(a)	33	(b)	39	(c)	45	(a)	51	(b)	57	(c)
4	(b)	10	(d)	16	(d)	22	(d)	28	(c)	34	(d)	40	(c)	46	(a)	52	(b)	58	(b)
5	(c)	11	(d)	17	(d)	23	(d)	29	(b)	35	(d)	41	(c)	47	(b)	53	(d)	59	(c)
6	(c)	12	(a)	18	(c)	24	(a)	30	(a)	36	(b)	42	(d)	48	(b)	54	(c)	60	(a)

SOLUTIONS

1. **(d)** **2.** **(d)**

3. **(d)** The reaction in which both oxidation and reduction take place simultaneously is called redox reaction.

$$\underset{\text{(oxidation)}}{\overset{-2e^-}{\overbrace{\underset{+3}{2FeCl_3} + \underset{+2}{SnCl_2} \longrightarrow \underset{+2}{2FeCl_2} + \underset{+4}{SnCl_4}}}}$$
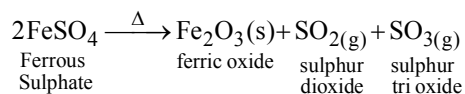$$\underset{+e^- \text{ (reduction)}}{\underbrace{}}$$
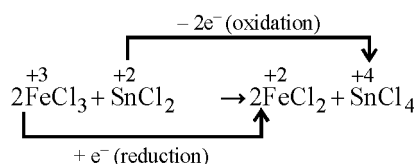
Therefore only (d) is redox reaction.

4. **(b)** As the pH of soil Y is Y is acidic (4.5). So it should be treated with powdered chalk to adjust pH.

5. **(c)** Sodium is very reactive metal and can react with moisture, are. Hence, it is kept in kerosene. Phosphorous (p) reactive momental and readily react with present in air, so it is kept in water.

6. **(c)** Dissolution of H_2SO_4 in water is an exthermic reaction.

7. **(a)** Antacids are weak bases which are given when a patient is suffering from acidity. These antacids neutralise the acid and give relief to patient.

8. **(d)** Al_2O_3 is an amphoteric oxide, so it can react with both acids and alkalis.

9. **(c)** Two gaseous products are obtained by decompositon of $FeSO_4$.

$$\underset{\substack{\text{Ferrous} \\ \text{Sulphate}}}{2FeSO_4} \xrightarrow{\Delta} \underset{\text{ferric oxide}}{Fe_2O_3(s)} + \underset{\substack{\text{sulphur} \\ \text{dioxide}}}{SO_{2(g)}} + \underset{\substack{\text{sulphur} \\ \text{tri oxide}}}{SO_{3(g)}}$$

10. **(d)** **11.** **(a)** **12.** **(a)**

13. **(a)** In the absence of oxygen, pyruvic acid is converted into lactic acid in the cytoplasm of the muscle cell.

14. **(b)** **15.** **(d)** **16.** **(a)** **17.** **(d)**

18. **(c)** Concave mirror form enlarged image of an object when it is placed between focus and centre of curvature.

19. **(a)** Angle of incidence is equal to the angle of reflection.

20. **(a)** Convex mirror only form virtual and erect image.

21. **(d)**

22. **(d)** Negative value of image distance signifies that the image is formed on the same side of the object. It is possible only when the image formed is virtual and erect. Such image is formed when the object is between focus and optical center in case of convex or any position of the object in case of concave lenses.

23. **(d)**

24. **(a)** A real and enlarged image can be formed by using a convex mirror.

25. **(d)** Copper is more reactive than silver hence displaces silver from silver nitrate solution.

26. **(a)** $2Cu + O_2 \xrightarrow{\Delta} \underset{\text{Black}}{2CuO}$

27. **(c)** **28.** **(b)**

29. **(a)** $CaCO_3 \xrightarrow{\Delta} CaO + CO_2$

30. **(b)** Citric acid is an example of organic acid or edible acid while HCl, H_2SO_4 and HNO_3 are mineral acids.

31. **(a)**

32. (b) In general, oxidation is the loss of electrons and the reactant like magnesium that loses electron acts as a reductant or reducing agent.

33. (a) **34.** (d)

35. (b) Sodium hydrogen carbonate react with acid present in fire extinguisher to produce carbon dioxide gas.

36. (d) Carbon dioxide is transported via blood to lungs mostly as carbaminohaemoglobin, carbonic acid and bicarbonate. It is released in lungs in exchange with oxygen.

37. (a) **38.** (a) **39.** (c)

40. (c) The stars in the sky apear twinking due to atmospheric refraction.

41. (d)

42. (a) Tricuspid valve is present between right atria and right ventricle.

43. (d) **44.** (a)

45. (a) Denstists uses concave mirror to focus light at a point.

46. (a) Placement of another identical prism in an inverted position with respect to the first and allowing the colours of spectrum to pass through it will change the spectrum into white light.

47. (b) The law of reflection is exactly the same for curved mirrors as for plane (flat) mirrors i.e. 'The angle of reflection equals the angle of incidence'

48. (a) Since reaction in beaker Y is not very vigorous so either the metal is less reactive or the acid B should be weak. But metal Y displaced the metal X from its salt solution due to which its colour has changed thus, we can say that metal Y is more reactive than metal X.

49. (c) Since solution is blue in colour.

50. (c) **51.** (b) **52.** (b) **53.** (d) **54.** (c) **55.** (c)

56. (a)

57 (c) For a spherical lens, $\dfrac{1}{v} - \dfrac{1}{u} = \dfrac{1}{f}$

For convex lens, $u = -f/2$ and f is $+$ ve

$\therefore \quad \dfrac{1}{v} = \dfrac{1}{f} + \dfrac{1}{u} = +\dfrac{1}{f} - \dfrac{2}{f} = -\dfrac{1}{f} \qquad \therefore v = -f$

58. (b) Magnification $m = 15$; Image distance $= v$

Magnification $= +\dfrac{v}{u}$ ..... (1)

From lens formula $\dfrac{1}{f} = \dfrac{1}{u} - \dfrac{1}{u}$; using Cartesian sign

$\dfrac{1}{f} = \dfrac{1}{v} - \dfrac{1}{-u}$

$\Rightarrow \dfrac{1}{f} = \dfrac{1}{v} + \dfrac{1}{u} \quad \therefore \quad \dfrac{1}{u} = \dfrac{1}{f} - \dfrac{1}{v}$

$\Rightarrow \dfrac{1}{u} = \dfrac{v-f}{vf} \qquad \Rightarrow u = \dfrac{vf}{v-f} \quad m = \dfrac{v(v-f)}{vf}$

Substituting value of v in eq. (1)

$m = \dfrac{v(v-f)}{vf} \quad \therefore \quad 15 = \dfrac{12-f}{f}$

$15f = 12 - f \Rightarrow 16f = 12 \Rightarrow f = \dfrac{12}{16} = 0.75\,\text{m}$

59. (c) Here, object distance, $u = -50$ (object on the left of the lens)

Focal length, $f = -20$ cm (focus on the left of the lens)

Image distance, $v = ?$

From lens formula, $\dfrac{1}{v} - \dfrac{1}{u} = \dfrac{1}{f}$

We have, $\dfrac{1}{v} = \dfrac{1}{f} + \dfrac{1}{u}$

Putting values, we get $\dfrac{1}{v} = \dfrac{1}{-20} + \dfrac{1}{-50} = \dfrac{-5-2}{100} = \dfrac{-7}{100}$ or

$v = -\dfrac{100}{7}\,\text{cm} = -14.3\,\text{cm}.$

The image is real.

60. (a) We know, if the size of the real and inverted image is same as that of the object, then the object is at $2F$ and image is also formed at $2F$ on the other side of the convex lens.

$m = \dfrac{I}{0} = \dfrac{-h}{h} = -1 \Rightarrow \dfrac{v}{u} = -1 \Rightarrow u = -v = -25\,\text{cm}$