Sample Paper 9

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

SOLUTIONS

1. **(b)** Decreasing order of pH value
Tooth paste → blood → saliva (after meal) → Coffee → Tomato Juice

2. **(d)** $CaO + H_2O \longrightarrow Ca(OH)_2$

$Ca(OH)_2 + 2NH_4Cl \longrightarrow CaCl_2 + 2NH_3\uparrow + 2H_2O$

3. **(b)**

4. **(c)** Baking Soda ($NaHCO_3$) is an basic salt and washing soda (Na_2CO_3) is also basic salt. The aqueous solution of common salt is neutral in nature.

$$NaCl(s) + H_2O(l) \rightarrow Na^+(aq) + Cl^-(aq)$$

Amla contains ascorbic acid and soap contains base (caustic soda or sodium hydroxide) spinach contains oxalic acid and thus its aqueous solution change colour of blue litmus to red.

5. **(b)** Phosphorus have very low ignition temperture thus it reacts with O_2 of air to form phosphorus pentaoxide.

$$\underset{(X)}{P_4} + 5O_2 \longrightarrow \underset{(Y)}{2P_2O_5}$$

This oxide is acidic thus dissolves in water to form acid.

$$P_2O_5 + 3H_2O \longrightarrow \underset{\text{(phosphoric acid)}}{2H_3PO_4}$$

Acid does not change the colour of red litmus but react with bases to form salt. Thus phosphoric acid reacts with sodium hydroxide to form sodium phosphate.

$$H_3PO_4 + 3NaOH \longrightarrow Na_3PO_4 + 3H_2O$$

6. **(d)** Balanced reaction is

$3Pb(NO_3)_2 + 2AlCl_3 \longrightarrow 2Al(NO_3)_3 + 3PbCl_2$

So, p = 3, q = 2, r = 2, s = 3

7. **(c)** Bee sting contains formic acid white enamel on our teeth is made up of calcium phosphate.

8. **(d)** Non-metals have different properties as compared to metals. Correct order on the basis of reactivity series is Fe < Zn < Al.

9. **(b)** (a), (c) and (d) are the example of thermal decomposition.
When limestone ($CaCO_3$) is heated strongly. It forms calcium carbonate and carbon dioxide.

$$CaCO_3 \xrightarrow{\Delta} CaO + CO_2$$

Like this, when ($2NaHCO_3$) sodium hydrogen carbonate is heated, it forms sodium carbonate, carbon dioxide and water.

When mercuric oxide is heated, mercury and oxygen is formed.

$$2HgO \xrightarrow{\Delta} 2Hg + O_2$$

10. **(a)** Turmeric solution + CH_3COOK = red solution.
(liquid) (Potassium acetate)

11. **(a)**

12. **(d)** Alveoli are thin, bag like structure, covered by a network of blood capillaries, They provicle a large surface area for gasious exchange.

13. **(c)** **14.** **(a)** **15.** **(d)**

16. **(b)** Ultrafiltration occurs at the barrier between the blood and the filtrate in the glomerular capsule (Bowman's capsule). Concentration of urine refers to water absorption from glomerular filtrate created by counter-current mechanism in Henle's loop. Urine is carried from kidney to bladder through ureter. Urinary bladder is a muscular sac, used for storage of urine.

17. **(c)**

18. **(c)** A convex lens will produce an enlarged, real and inverted image beyond 2F if the object is placed between F and 2F.

19. **(a)**

20. **(a)** f = –15 cm V = –10 cm

As we know,

$$\frac{1}{v}-\frac{1}{u}=\frac{1}{f}\ \ \frac{1}{u}=\frac{1}{v}-\frac{1}{f}=-\frac{1}{10}-\left(-\frac{1}{15}\right)$$

$$=-\frac{1}{10}+\frac{1}{15}=-\frac{3+2}{30}=-\frac{1}{30}\ \ u=-30\text{ cm}$$

21. **(c)**

22. **(a)** For an incident ray directed towards centre of curvature of a spherical mirror the reflected ray retraces its path.

23. **(b)** **24.** **(a)**

25. **(d)** Non-metals oxides are acidic in nature.

26. **(a)**

27. **(b)** This is due to the formation of sulphur dioxide, SO_2.

28. **(b)** **29.** **(b)**

30. **(b)** Rock salt is spread on the roads to prevent the water from freezing at zero degree celsius.

31. **(b)** Potassium is a metal and hence, it forms basic oxide. It turns red litmus blue.

32. **(d)** A reducing agent is a substance which oxidizes itself but reduces others i.e., looses electrons.

33. **(c)**

34. **(a)** Refraction of light is due to change in speed of light when it goes from one medium to another medium.

35. **(d)** HCl (Hydrochloric acid) is a strong acid.

$$HCl\longrightarrow H^+ + Cl^-$$

36. **(b)** **37.** **(b)** **38.** **(c)**

39. **(d)** As the rays are diverging so the optical device is convex mirror.

40. **(a)** Refraction at the upper surface of the slab.

$$\frac{\mu_2}{\mu_1}=\frac{\text{Apparent depth}}{\text{Real depth}}$$

41. **(d)** **42.** **(d)**

43. **(b)** $\frac{v_2}{v_1}=\frac{\mu_1}{\mu_2}=\frac{1}{1.33}$ or $v_2=\frac{v_1}{1.33}=2.25\times10^8\text{ m/s}$

44. **(c)** On passing through a prism, white light breaks into seven colours VIBGYOR. If the second identical prism is placed in an inverted position w.r.t. the first prism the colours of the spectrum recombine and emerges as a parallel beam of white light.

45. **(c)** Given v = nu As $\frac{1}{v}+\frac{1}{u}=\frac{1}{f}$

$$\therefore\ \frac{1}{nu}+\frac{1}{u}=\frac{1}{f}\text{ or }u=\frac{(n+1)f}{n}$$

46. **(c)**

47. **(a)** According to Snell's law

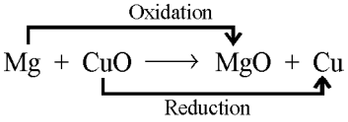
$$^1\mu_2=\frac{\sin i}{\sin r}$$

48. **(c)** Silver is not used commonly to make electrical devices because it is costly metal.

49. **(b)**

50. **(d)** It is an example of displacement reaction. In it Al metal displaces iron from Fe_2O_3 when reaction is carried out in aqueous solution.

51. **(c)** a.



b. Copper is displaced by Mg.

52. **(d)** As in all above reactions complex substances decomposes to give simple subtances.

53. **(c)** **54.** **(b)** **55.** **(c)** **56.** **(b)**

57. **(a)** Let the 3 media be 1, 2 and 3, 1 for air, 2 for water, 3 for glass in that order.

Given : $_1\mu_2=\frac{4}{3}$, $_2\mu_3=?$, $_3\mu_1=\frac{1}{3/2}$,

[$\because\ _1\mu_3=\frac{3}{2}$ and $\therefore\ _3\mu_1$ is the reciprocal of $_1\mu_3$]

Now using the formula, $_1\mu_2\cdot\ _2\mu_3\cdot\ _3\mu_1=1$ and substituting values, we have

$$\frac{4}{3}\cdot\ _2\mu_3\cdot\frac{2}{3}=1\ \Rightarrow\ _2\mu_3=\frac{1\times3\times3}{4\times2}=\frac{9}{8}$$

$\therefore$ The refractive index of glass with respect to water is 9/8

58. **(b)**

59. **(b)** According to Snell's law, $^a\mu_w=\frac{\sin i}{\sin r}$

$$\therefore\ \sin r=\frac{\sin i}{^a\mu_w}=\frac{\sin 40}{4/3}=\frac{3\times0.6427}{4}=0.4820$$

$r=\sin^{-1}(0.4820)=28.82°$ (approx.)

60. **(c)** Snell's law gives, $n_w\sin\theta_1=n_a\sin\theta_2$

$\Rightarrow\ \sin\theta_2=(1.33)\sin 38^o$

Therefore, the angle of refraction of the light into air $\theta_2=55^o$