Sample Paper 7

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

SOLUTIONS

1. **(c)** $Na_2CO_3 + 2HCl \longrightarrow 2NaCl + H_2O + CO_2$

$Na_2CO_3 + NaOH \longrightarrow$ no reaction

2. **(d)** Because it can furnish H^+ ions in solution.

3. **(c)** Zinc is more reactive than copper, hence zinc will displace copper from copper sulphate solution.

$$\underset{\text{(silvery grey)}}{Zn} + CuSO_4 \longrightarrow ZnSO_4 + \underset{\text{(Brown)}}{Cu}$$

4. **(b)** $Na_2CO_3 + 2HCl \longrightarrow 2NaCl + CO_2 + H_2O$

5. **(a)** HCl is a strong acid.

6. **(b)**

7. **(d)** Reactants and product are gaseous.

8. **(d)** H_3PO_4 is tribasic because it has three ionisable H^+ ions.

9. **(a)** $2ZnS(s) + 3O_2(g) \xrightarrow{\Delta} 2ZnO + 2SO_2$

The sulphide ore is heated in presence of air to produce its oxide form at a temperature below the melting point of the metal. The process is known as roasting.

10. **(d)** Rancidity of oil is a redox reaction.

11. **(a)** **12.** **(a)** **13.** **(c)** **14.** **(d)** **15.** **(d)** **16.** **(d)**

17. **(a)** **18.** **(b)**

19. **(d)** A point-sized object placed at infinity of a concave mirror will produce a real & inverted, highly diminished image at its focus.

20. **(b)**

21. **(b)** When prism is placed with angle A in the upward direction, third colour from the top is yellow. But when prism is placed inverted, third colour from top is blue.

22. **(a)**

23. **(b)** A ray of light traveling from optically denser to the optically rarer medium will bend away from the normal.

24. **(a)** **25.** **(a)**

26. **(a)** $Cu_2S + 3O_2 \longrightarrow 2Cu_2O + 2SO_2$

$2Cu_2O + Cu_2S \longrightarrow 6Cu + SO_2$

X = Cuprous sulphide, Y = Cuprous oxide

27. **(d)** Respiration is a type of oxidations, reaction and exothermic.

28. **(a)**

29. **(b)** **30.** **(b)**

31. **(a)** Bases generate hydroxide ions in water hence water soluble bases are called alkalis.

32. **(a)** The bond dissociation energy of N_2 is very high due to presence of triple bond between two nitrogen atoms. Therefore, nitrate ores are rarely available.

33. **(c)** Anaerobic respiration is an incomplete breakdown of glucose. It takes place in the cytoplasm of cell. It takes place in the absence of oxygen.

34. **(a)**

35. **(a)** Chlorine displaces iodine from potassium iodide solution.

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

39. **(a)** $\frac{1}{v} - \frac{1}{2f} = \frac{1}{f} \Rightarrow \frac{1}{v} = \frac{3}{2f} \Rightarrow v = \frac{2}{3}f$

$\therefore m = \frac{v}{u} = \frac{2}{3}\frac{f}{2f} = \frac{1}{3}$

40. **(a)**

41. **(b)** Yeast, Mushroom and Breadmoulds are saprotrophs. These are the organisms that first diguts then inguts.

42. **(b)**

43. **(a)** Ray of light while travelling from air to water slows down because velocity of light is slower in water than in air.

44. **(a)**

45. **(b)** The focus of concave mirror is virtual.

46. **(c)** Concave mirror is called converging mirror.

47. **(a)**

48. **(b)** Chemical 'A' is calcium hydroxide (slaked lime).

$$Ca(OH)_2 + Na_2CO_3 \longrightarrow 2NaOH + CaCO_3 \downarrow$$

49. **(c)** **50.** **(b)**

51. **(c)** In chloroplast Mg is present.

52. **(d)** Sodium and potassium both are extremely reactive and react with water so vigorously. The reaction is highly exothermic so the hydrogen evolved will catch fire.

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

57. **(a)** According to Snell's laws, $\frac{\sin i}{\sin r} = \mu$

Angle between refractive and reflective waves
$= 180^o - (i + r) = 90^o$
$i + r = 90^o \Rightarrow r = 90° - i$

$$\mu = \frac{\sin i}{\sin(90^o - i)} = \frac{\sin i}{\cos i} = \tan i \quad \Rightarrow i = \tan^{-1}(\mu)$$

58. **(c)** Refractive index $\mu = \frac{\sin i}{\sin r} = \frac{\sin 45°}{\sin 30°} = \frac{\frac{1}{\sqrt{2}}}{\frac{1}{2}} = \sqrt{2}$

59. **(a)** Given,
Velocity of light in air, $c = 3 \times 10^8$ ms^{-1} ; Refractive index of water $\mu_w = \frac{4}{3}$

Refractive index of water, $\mu_w = \frac{c}{v_w}$

Where v_w is the velocity of light in water

$$\frac{4}{3} = \frac{3\times10^8}{v_w} \quad \Rightarrow v_w = \frac{3\times3\times10^8}{4} = 2.25 \times 10^8 \text{ ms}^{-1}$$

Velocity of light in water is 2.25×10^8 ms^{-1}.

60. **(c)** Snell's law, $\mu = \frac{\sin i}{\sin r}$

$$\Rightarrow \quad \sin r = \frac{\sin 40°}{4/3}$$

$$\Rightarrow \quad \sin r = \frac{3 \times 0.6427}{4} = 0.4820$$

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