Sample Paper 2

SOLUTIONS

1. **(a)** Dilution (addition of water) decreases H^+ ions and increases the pH of solution A while dilution of B decreases OH^- ion and decreases pH of solution B.

2. **(c)** Sometimes a few eipdermal cells in the vicinity of the gurad cells become specialised in their shape and size are known as subsididary cells or accessory cells

3. **(c)**

Fe_2O_3	Basic
Al_2O_3	Amphoteric
CO	Neutral
NO_2	Acidic

4. **(d)** $Zn\,(s) + 2\,HCl\,(aq) \longrightarrow ZnCl_2\,(aq) + H_2$

5. **(b)** 6. **(b)** 7. **(b)**

8. **(c)** Caustic soda i.e.NaOHis used in manufacture of soap and calcium hydroixde $(Ca(OH))_2$ is used in antacids.

9. **(b)** 10. **(a)** 11. **(d)**

12. **(b)**

$$2FeCl_2 + Cl_2 \rightleftharpoons 2FeCl_3$$

Oxidation (top), Reduction (bottom)

Oxidising agent is that substance which donate electrons while reducing agent is that substance which accepts electrons.

∴ Cl_2 is a oxidising agent.

13. **(d)** $AlPO_4$, $(NH_4)_2CO_3$, Na_2SO_3.

14. **(d)** P_4O_{10} is an acidic oxide, while CO is a neutral oxide. Though it is an oxide of non metal but it does not react with either acid or base.

15. **(c)** 16. **(c)**

17. **(b)** Concave mirror is used as a shaving mirror

18. **(a)** 19. **(a)** 20. **(a)**

21. **(b)** $_a\mu_g = \dfrac{\sin 60°}{\sin 35°}$ and $_a\mu_w = \dfrac{\sin 60°}{\sin 41°}$

22. **(a)** Scattering of light is not enough at such heights.

23. **(a)**

24. **(b)** $P = P_1 + P_2 \Rightarrow P = \dfrac{1}{f_1} + \dfrac{1}{f_2} \Rightarrow P = \dfrac{f_1 + f_2}{f_1 f_2}$

25. **(b)**

$$CaSO_4 \cdot \tfrac{1}{2}H_2O + \tfrac{3}{2}H_2O \longrightarrow CaSO_4 \cdot 2H_2O$$
(Gypsum)

$\Delta \Big| 373\ K$

$$CaSO_4 \cdot \tfrac{1}{2}H_2O + \tfrac{3}{2}H_2O$$
Plaster of paris

26. **(c)** A is metal because the oxide of metal dissolves in H_2O to form alkaline solution. The aqueous solution of oxide of element A reacts with aqueous solution of oxide of element B, thus aqueous solution of oxide of element B will be acidic because reaction between two alkalies is not possible. Therefore element B will be non-metal as oxides of non-metals are acidic in nature.

27. **(b)** Here HNO_3 acts as an acid which on combining with base NaOH forms corresponding salt and water.

28. **(c)** The third statement is wrong because acid reacts with metal carbonates to form metallic salt, carbon dioxide gas and water

29. **(c)**
    (A) $NH_4OH + CH_3COOH \longrightarrow CH_3COONH_4 + H_2O$
    It is a neutralization reaction. In this type of reaction, acid is neutralized by base or vice-versa and energy is relased.
    (B) $2AgBr \longrightarrow 2Ag + Br_2$ is an example of photochemical reaction. This type of reaction takes place in presence of light. This endothermic as well as a redox reaction

30. **(d)** Mixture of iron filling and sulphur powder can be separated either by using a magnet or dissolving the mixture in CS_2, sulphur is soluble in CS_2, on filtration iron gets filtered.

31. **(a)** 32. **(a)**

33. **(d)** Deamination takes place in liver during excretion to make excess of amino acids which can not be incorporated into protoplasm.

34. **(b)**

35. **(c)** Ammonium nitrate is salt of strong acid and weak base.

36. **(b)**

37. **(c)** Root cap is devoid of root hairs which are instrumental in water absorption by increasing the surface area to speed up osmosis and thus root cap is not involved in the water absorption.

38. **(c)** 39. **(a)** 40. **(b)** 41. **(a)**

42. **(b)** The human saliva contains an enzyme called salivary amylase, which breaks down the starch present in food into suger. The digestion of starch(carbohydrates) begins in the mouth. In case, saliva is lacking, it will affect the break down of starch.

43. **(c)**

44. **(c)** $+5 = -\dfrac{v}{u} \Rightarrow v = -5u$

    Using $\Rightarrow \dfrac{1}{v} + \dfrac{1}{u} = \dfrac{1}{f} \Rightarrow \dfrac{1}{-5u} + \dfrac{1}{u} = \dfrac{-1}{0.4}$

    $\therefore \quad u = -0.32$ m.

45. **(c)** As parallel beam incident on diverging lens will form image at focus.
    $\therefore \quad v = -25$ cm
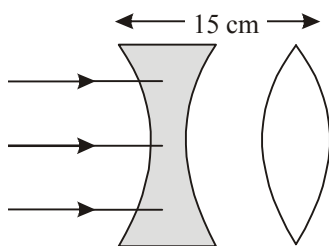
    $f = -25\ cm \qquad f = 20\ cm$

    The image formed by diverging lens is used as an object for converging lens,

So for converging lens $u = -25 - 15 = -40\ cm$, $f = 20\ cm$

$\therefore$ Final image formed by converging lens

$\dfrac{1}{V} - \dfrac{1}{-40} = \dfrac{1}{20}$

or, $V = 40$ cm from converging lens real and inverted.

46. **(c)** 47. **(b)**

48. **(d)** **Iron:** deposition of redish brown layer of $Fe_2O_3 . xH_2O$ (rust) on exposure to moist air.
    Copper: Green layer of corrosion [basic copper carbonate]

49. **(c)** Dissolution of calcium in water is an exothermic to reaction

50. **(b)** Dissolutuion of Ammonium chloride is an endothermic reaction

51. **(c)** When magnesium reacts with air, it bums with a dazzling light and form magnesium oxide. This reaction is exothermic.

    $2\,Mg + O_2 \longrightarrow 2\,MgO + Energy$

52. **(c)** Buring of LPG results into the realse of heat.

53. **(a)** 54. **(a)**

55. **(a)** The person A has normal blood pressure (120/80 mm Hg).

56. **(a)**

57. **(a)** Object size $h_0 = 5.0$ cm, $f = 20$ cm,
    Object distance $u = -30$ cm

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

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

    Then $\dfrac{1}{v} = \dfrac{1}{20} + \dfrac{1}{-30} = \dfrac{1}{60}$

    $\therefore \quad v = +60$ cm

    Positive sign of v shows that image is formed at a distance of 60 cm from the pole to the right of the lens.
    Therefore image is real and inverted.

58. **(a)** Power $= \dfrac{1}{f} = \dfrac{1}{0.2m} = +5\,D$

59. **(d)** Magnification,

    $m = \dfrac{\text{Image height}}{\text{Object height}} = \dfrac{\text{image distance}}{\text{Object distance}}$

60. **(a)** Power $= \dfrac{1}{\text{focal length}}$