

# CHEMISTRY

21. (4)

As shown in (4) graph step require larger activation energy and product level is always more than reactant energy level in endothermic reaction.

22. (2)

Arrhenius equation  $k = A.e^{-\frac{E_a}{RT}}$

If  $T \rightarrow \infty$ , then  $k = A.e^{-\frac{E_a}{R\infty}}$  ( $K = A . e^0$ )

$\Rightarrow k = A = 6.0 \times 10^{14} \text{ s}^{-1}$

23. (1)

$k = A.e^{-\frac{E_a}{RT}}$

If  $E_a = 0$

$k = A.e^{\frac{0}{RT}}$

$k = A \therefore A = 1.6 \times 10^6 \text{ s}^{-1}$

24. (3)

$\Delta H^0 =$  Difference in energy of products and reactants  $= E_a(2) - E_a(1) = c - a$

25. (3)

Copper crystallises in fcc lattice

If  $r =$  radius  $a =$  edge length then

$r = \frac{a}{2\sqrt{2}} = \frac{361}{2\sqrt{2}} \text{ pm} = 127.633 \text{ pm}$

$= 128 \text{ pm}$

26. (4)

$2(r_{\text{Na}^+} + r_{\text{Cl}^-}) = a$

$r_{\text{Na}^+} + r_{\text{Cl}^-} = \frac{a}{2} = \frac{552}{2} = 276 \text{ pm}$

$r_{\text{Cl}^-} = 276 - r_{\text{Na}^+}$

$= 276 - 95 = 181 \text{ pm}$

27. (1)

KBr will have fcc structure with co-ordination no 6 : 6

$\therefore \frac{r^+}{r^-} = \frac{254}{400} = 0.635$  falls in the range

$0.414 - 0.732$ .

28. (3)

$\frac{r^+}{r^-} = 0.225 - 0.414$

$f_B$  co-ordination number 4

Hence,  $r^- = \frac{22.5}{0.225} = 100 \text{ pm}$

29. (3)

Number of atoms in 4 g of

$X = \frac{4}{40} \times N_A = 0.1N_A$

Since bcc crystal has 2 atoms per unit cell, Number of unit cell

30. (1)

In HCP, 74% of the available space is occupied.