PART (B) : CHEMISTRY

Answer Key & Solution

21. (D)

Ce $\frac{50.4}{140}$ 0.36 $\frac{0.36}{0.36}=1$

N $\frac{15.1}{14}$ 1.07 2.97

O $\frac{34.5}{16}$ 2.15 5.97

EF CeN_3O_6

Ans. (D)

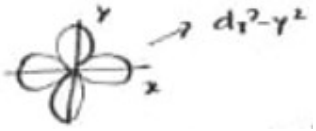
22. (B)

For $n = 3$, $\ell = 0, 1, 2$

s p d

23. (A)

I $d_{x^2-y^2}$ axial orbital



II Depends on the principal quantum number.

24. (B)

Electron de-exciter from $n = 2$ to $n = 1$ as $E_{n_2} - E_1 = 10.2$ eV

Change in angular momentum

$= \frac{h}{2\pi}(2-1) = \frac{h}{2\pi}$

25. (C)

Greater the $\frac{\text{charge}}{\text{size}}$ ratio

Greater is the hydration energy

26. (C)

$x = 2.18\times10^6 \times \frac{1}{1}$ m/sec

Speed in 2nd orbital $= 2.18\times10^6 \times \frac{4}{2}$

$Be^{+3} = 2x$

27. (C)

$$\frac{1}{\lambda} = R \times 4\left[\frac{1}{1^2} - \frac{1}{\infty^2}\right] = 4R$$

$$\frac{1}{y} = R \times 9\left[\frac{1}{4} - \frac{1}{9}\right] = 9R \times \frac{5}{36} = \frac{5R}{4}$$

$$\Rightarrow \frac{1}{x}\Big/\frac{1}{y} = \frac{4R \times 4}{5R} = \frac{16}{5}$$

$$\Rightarrow \frac{Y}{\lambda} = \frac{16}{5} \Rightarrow y = \frac{16x}{5}$$

28. (C)

s-orbtial never form π-bond.

29. (D)

30. (B)

$NaOH + HCl \rightarrow NaCl + H_2O$

m moles of HCl = m mole of NaOH

= 100

$\therefore$ mass of NaOH $= 100 \times 10^{-3} \times 40\,gm$

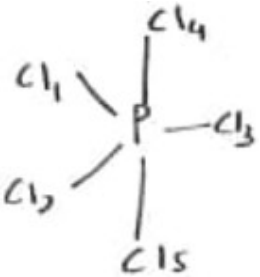
% purity = 40%

31. (B)

32. (D)

Factual

33. (B)



4 planes which contain 4 atoms in a plan

$PCl_1Cl_2Cl_3$

$PCl_1Cl_4Cl_5$

$PCl_2Cl_4Cl_5$

$PCl_2Cl_4Cl_5$

$PCl_3Cl_4Cl_5$

34. (C)

35. (D)
(A) All Fluorine atoms are on same face
(B) Planar molecule
(C) All fluorine are in same plane

36. (B, C)
IE Be > B Penetration effect
IE N > O Half filled stability

37. (A, B, C)
Greater the +ve charge lesser the radius
Size of cation < parent element
Size of anion > parent atom

38. (BCD)

39. (A, C)

40. (ABCD)
Size of noble gas largest in its periods as Vander Waals radius reported for noble gases.