

F-BLOCK

1. The electronic configurations of bivalent europium and trivalent cerium are
(atomic number : Xe = 54, Ce = 58, Eu = 63)
- (1) [Xe] $4f^4$ and [Xe] $4f^9$
 - (2) [Xe] $4f^7$ and [Xe] $4f^1$
 - (3) [Xe] $4f^7 6s^2$ and [Xe] $4f^2 6s^2$
 - (4) [Xe] $4f^2$ and [Xe] $4f^7$
2. The lanthanoid that does NOT show +4 oxidation state is
(1) Dy (2) Eu (3) Ce (4) Tb
3. Mischmetal is an alloy consisting mainly of:
(1) lanthanoid metals
(2) actinoid metals
(3) actinoid and transition metals
(4) lanthanoid and actinoid metals

SOLUTION

1. NTA Ans. (2)

Sol. $\text{Eu}_{63} \Rightarrow [\text{Xe}] 4f^7 5d^0 6s^2$

$\text{Eu}^{2\oplus} \Rightarrow [\text{Xe}] 4f^7$

$\text{Ce}_{58} \Rightarrow [\text{Xe}] 4f^1 5d^1 6s^2$

$\text{Ce}^{3\oplus} \Rightarrow [\text{Xe}] 4f^1$

2. Official Ans. by NTA (2)

3. Official Ans. by NTA (1)

Sol. Alloys of lanthanides with Fe are called Misch metal, which consists of a lanthanoid metal (~95%) and iron (~5%) and traces of S, C, Ca and Al.