

- Q<sub>3</sub> (a)
- (i) alkaline metal - B
  - (ii) element with external electronic configuration of  $d^7s^2$  - F
  - (iii) lanthanide element - A
  - (iv) representative element block-p - C, K, I, G
  - (v) half-filled f-orbital - A, D
  - (vi) halogen element - I
  - (vii) representative element-s : B & J
  - (viii) actinide element - D
  - (ix) transition metals-d : H, F, E
  - (x) noble gas : G
  - (xi) alkaline earth element : J

- Q<sub>3</sub> (b)
- (i) Electronic configuration :  $Z$  for C =  $57 + 14 + 12 = 83$
- $Z = 83$  : C :  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 4d^{10} 4f^{14} 5s^2 5p^6 5d^{10} 6s^2 6p^3$
- $Z = 24$  : H :  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$
- $Z = 38$  : J :  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 5s^2$
- (ii)  $J^{2+} I^-$  :  $JI_2$  (ionic compound)
- (iii)  $KI_2$   $I \overset{\cdot\cdot}{\times} K \overset{\cdot\cdot}{\times} I$  (covalent compound)
- (iv)  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 4d^{10} 5s^2$  : J