



(i) Atomic Number for the noble gas below Rn is 118.

(ii) Period 4 : $1s^2 2s^2 2p^6 3s^2 3p^6 3d^7 4s^2$
 $Z = 27$: Cobalt.

(iii) TL : $[Xe] 5d^{10} 6s^2 6p^1$
 $Z = 81$ where $[Xe] : 1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 4d^{10} 5s^2 5p^6$

(iv)

O	→	O ⁺
$1s^2 2s^2 2p^4$		$1s^2 2s^2 2p^3$ (very stable - half filled)
N	→	N ⁺
$1s^2 2s^2 2p^3$		$1s^2 2s^2 2p^2$
(Very stable) - half filled		

N atom is stable (half-filled configuration: $\boxed{1} \boxed{1} \boxed{1} 2p^3$)
 So it require very high energy to destroy this stable configuration. Whereas O⁺ ion is very stable, so it is very easily formed - require low energy/less energy to remove a electron from $2p^4$ orbital.

(v) Co^{2+} & Co^{3+}

Co^{2+}	:	$1s^2 2s^2 2p^6 3s^2 3p^6 3d^7 4s^0$
Co^{3+}	:	$1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^0$

CoI_2 Cobalt (II) iodide
 CoI_3 Cobalt (III) iodide

