81. (3)
82. (2)
83. (3)
84. (2)
85. (3)
86. (4) On calculating bond order of species given in question

$C_2 = 2$ $\quad C_2^{2-} = 3$

$B_2^+ = 0.5$ $\quad B_2 = 1$

$Li_2^+ = 0.5$ $\quad Li_2 = 1$

$O_2 = 2.0$ $\quad O_2^- = 1.5$

$$\text{Bond length} \propto \frac{1}{\text{Bond order}}$$

$\therefore\ O_2^- > O_2$

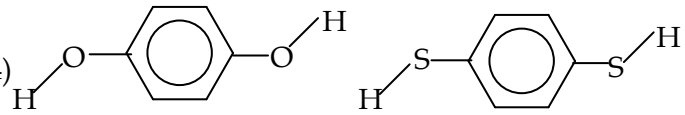
87. (3)
88. (2) Both NO_2 and O_3 have angular shape and hence will have net dipole moment.
89. (3) $H_2^{2+} = \sigma 1s^0 \sigma^* 1s^0$

bond order for $H_2^{2+} = \frac{1}{2}(0-0) = 0$

$He_2 = \sigma 1s^2 \sigma^* 1s^2$

bond order for $He_2 = \frac{1}{2}(2-2) = 0$

so both He_2^{2+} and He_2 do not exist

90. (4) 

In both the molecules the bond moments are not cancelling with each other and hence the molecules has a resultant dipole and hence the molecule is polar.