

**NPTEL Inorganic chemistry of life – *Principles and perspectives***

**Week 4 - Assignment 4**

**W4\_01.** Discuss chelate, macrocyclic and macrobicyclic effects using an example in each case.

**W4\_02.** Write each of the following statement is TRUE or FALSE!

The transport rate of ion of a channel forming ionophore is much higher than the simple carrier ionophores.

(a) Ion transport rates of the carboxylic derivatives of crown-ethers depend upon pH.

(b) The interaction of  $Mg^{2+}$  with t-RNA is primarily of secondary coordination type.

Ionophores having  $\log K_{ass}$  of 4 to 6, exhibit highest transport rates.

**W4\_03.** While the cryptand [2,2,1] is selective for sodium, it is the [2,2,2] that is selective for potassium. Explain?

**W4\_04.** While 18-crown-6 exhibits a  $\log K_a$  of 4.5, that of 2,6-dioxo-18-crown-6 shows only 2.5. Explain?

**W4\_05.** A carboxylic derivative of 18-crown-6 ether shows increasing transport rates for  $Ca^{2+}$  as a function of increase in pH. Where as this is exactly the reverse for  $K^+$ . Explain all these observations individually as well as in comparison with each other.