CY 1001 – Assignment on aromaticity.

1. Classify the following molecules as aromatic, anti-aromatic or non-aromatic.



1. Draw the Frost diagram for cyclooctatetraene (COT), assuming that it is planar. Based on the Frost diagram decide whether planar COT would be aromatic/anti-aromatic/non-aromatic.
2. Molecular formula of azulene is C10H10. For a hydrocarbon it has unusually large dipole moment of 0.8 Debye units. Explain.



1. While cyclopentenyl chloride readily reacts with silver salt, cyclopentadieneyl chloride does not react. Explain.



1. When reacted with alkali metal cyclooctatetraene is readily reduced to the corresponding dianion. Why? Draw the Frost diagram for the dianion and decide whether it is aromatic or anti-aromatic or non-aromatic.



1. What is the structure of the product of dimerization of cyclobutadiene?
2. The rotational barrier of a C=C (double bond) in alkenes is usually very high and it does not happen at room temperature. However the rotation barrier of the C=C bond indicated in the following molecule is quite low. Explain.



1. Though an aromatic compound, anthracene is known to undergo addition of bromine as shown below. Explain why addition reaction of anthracene occurs.



END