Answer on Question #37780-Chemistry-Organic Chemistry

Question

Predict index of hydrogen deficiency in following compounds
C_8H_7NO, $C_{21}H_{22}NO_2$, $C_5H_3ClN_4$, $C_4H_4BrNO_2$

Answer

For any substance of general molecular formula $C_cH_hN_nO_oX_x$ (where X – halogen), index of hydrogen deficiency (IHD) is calculated as:

$$IHD = 0.5\cdot[2\cdot c+2-h-x+n]$$

For C_8H_7NO:

$$IHD = 0.5\cdot[2\cdot 8+2-7+1] = 6$$

For $C_{21}H_{22}NO_2$:

$$IHD = 0.5\cdot[2\cdot 21+2-22+1] = 11.5$$

For $C_5H_3ClN_4$:

$$IHD = 0.5\cdot[2\cdot 5+2-3-1+4] = 6$$

For $C_4H_4BrNO_2$:

$$IHD = 0.5\cdot[2\cdot 4+2-4-1+1] = 3$$