Question 7

7. **Amongst N_2H_4, C_2H_4, C_4H_{10} predict which would have the largest dipole and lowest boiling point?**

Answer:

N_2H_4 is a polar molecule with London dispersion forces, dipole-dipole forces, and hydrogen bonding between molecules, whereas C_4H_{10}, C_2H_4 are nonpolar and only has London dispersion forces between molecules. It takes more energy to overcome the stronger intermolecular force in hydrazine, resulting in a higher boiling point.

N_2H_4 – largest dipole-dipole forces

C_2H_4 – lowest boiling point