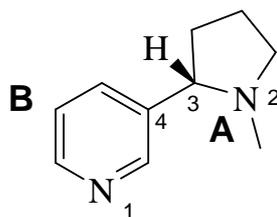


**Marks**  
**8**

- The molecular structure of nicotine, the addictive component of tobacco, is shown below.



List the types of intermolecular interactions that each of the following sites on nicotine would be involved in when it is dissolved in water.

**A**

**B**

Provide the requested information for each of the indicated atoms in nicotine.

Atom	Geometric arrangement of the electron pairs around the atom	Hybridisation of the atom	Geometry around the atom
N-1			
N-2			
C-3			
C-4			

The  $pK_b$  of N-1 is 10.88 and the  $pK_b$  of N-2 is 5.98. Draw the structure of the predominant form of nicotine that exists in the human body at pH 7.4.