AMINES – TEST 1

QUESTION 1
Which of the following is untrue of the amines?

A Most amines have the general formula $C_nH_{2n+3}N$
B Cannot hydrogen bond with water
C Amines are basic in nature
D Amines are polar molecules

QUESTION 2
Compared to the alkanes, amines have

A higher melting and boiling points
B lower viscosities
C higher volatility
D lower polarity

QUESTION 3
As straight chain amines get larger

A the melting and boiling points decrease
B the density decreases
C the viscosity decreases
D the volatility decreases

QUESTION 4
The strongest type of intermolecular bonding found between amines is

A dispersion forces
B dipole-dipole bonding
C hydrogen bonding
D ionic bonding

QUESTION 5
Which of the following reaction types can amines undergo?

i. Substitution
ii. Addition
iii. Acid - Base

A i and ii
B ii and iii
C i and iii
D i, ii and iii

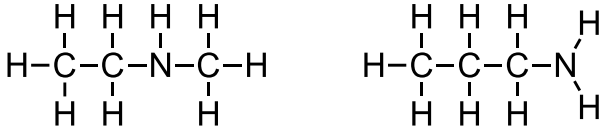
QUESTION 6

CH_3NH_2 boils at -6.0ºC whereas CH_3OH boils at 65ºC. What does this suggest about the intermolecular bonding in the two substances?

Solution

QUESTION 7

Methyl ethylamine (a secondary amine – amine group connected to two carbons) and 1-propylamine have the same molecular mass but different boiling points.



Methyl ethylamine b.p.= 37ºC 1 propylamine b.p.= 48ºC

Suggest a reason for the difference in boiling points.

Solution

SOLUTIONS

QUESTION 1 Answer is B

QUESTION 2 Answer is A

QUESTION 3 Answer is D

QUESTION 4 Answer is C

QUESTION 5 Answer is C

QUESTION 6

Both molecules are held together via dispersion forces and hydrogen bonding. Since CH_3OH has a higher boiling point than CH_3NH_2, the hydrogen bonding between CH_3OH molecules must be stronger than the hydrogen bonding between CH_3NH_2 molecules.

QUESTION 7

Since methyl ethylamine is a secondary amine, there is only one site at which hydrogen bonding can occur. In propylamine there are two sites of hydrogen bonding and therefore it has the higher boiling point.