13 One particle of X reacts with one particle of Y in a single-step reaction to produce two particles of Z.

This reaction is exothermic and reversible.

$$X + Y \rightleftharpoons 2Z$$

Three statements about the forward and reverse reactions are listed.

1 The activation energy of the forward reaction is equal to the activation energy of the reverse reaction.

2 At equilibrium, the frequency of collisions between one particle of X and one particle of Y is equal to the frequency of collisions between two particles of Z.

3 At equilibrium, the frequency of effective collisions between one particle of X and one particle of Y is equal to the frequency of effective collisions between two particles of Z.

Which statements are correct?

A 1 only **B** 2 and 3 **C** 2 only **D** 3 only