9. Higher order (>3) reactions are rare due to:

(1) low probability of simultaneous collision of all the reacting species

(2) increase in entropy and activation energy as more molecules are involved

(3) shifting of equilibrium towards reactants due to elastic collisions

(4) loss of active species on collision.

Answer: Order of reaction determined by reacting species coming in contact during reaction. As number of reacting species increases it is not necessary all of them will come in contact to each other moreover often when reacting species increases often they reacts among then and produces intermediate product which reacts. For example say we have 5 species to react A+B+C+D+E , once we subjects these constituents to react say B+D can give P , A+E gives Q so reacting constituents becomes P+Q+D. Also since numbers of species are 5 there is less chance they all will come in contact with each other.

So correct option is (1) low probability of simultaneous collision of all the reacting species.