

MODEL QUESTION

CLASS-XI

CHEMISTRY

Assertion-Reason Question (MCQ) :

The following question two questions have two statements labelled as Assertion (A) and Reason (R), (B),(C)and (D) as given below:

- (A) Both Assertion (A) and Reason (R) are true but Reason (R) is the correct explanation of the Assertion(A).
- (B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of the Assertion(A).
- (C) Assertion (A) is true but Reason (R) is false.
- (D) Assertion (A) is false but Reason (R) is true.

- Q. 1. Assertion (A) : IN HCl molecule the covalent bond is polar. Reason (R) : This is due to different electronegativity of hydrogen and chlorine. 1
- Q.2. Assertion (A) : Cis-but-2-ene and trans-but-2-ene have different properties. Reason (R) : The two isomers have different constitutions. 1

Case-Study Based Question:

The following question is case-study based question. Read the case carefully and write the answer of the questions that follow:

Hybridisation is defined as the process of intermixing of the atomic orbitals of slightly different energies resulting in the formation of new set of orbitals of equivalent energies and shape. Hybridisation affects the electronegativity and influences the bond length and bond enthalpy in compounds. The hybrid orbitals are more effective in forming stable bonds than the pure atomic orbitals and are directed in space in some preferred direction to have minimum repulsion between electron pairs and thus a stable arrangement. The type of hybridisation indicates the geometry and shape of the molecules.

Either,

- (a) What is s character of a hybrid orbital?
- (b) Acetylene reacts with sodium metal to liberate hydrogen gas but methane does not react with the metal at all. Give reason. 1+2=3

Or,

- (c) How many hybrid orbitals does the sp^3d hybridized phosphorus atom have in PCl_5 ?
- (d) Explain the shape of H_2O molecule. 1+2=3