

Solutions

2.1 A Distinguish addition, substitution, oxidation and polymerization by tracing bonds before and after reaction. Conditions and reagents belong to the reaction arrow; they are not interchangeable labels.

2.2 Ethene:Br₂ mole ratio 1:1, so 0.15 mol ethene needs 0.15 mol Br₂.

2.3 False. Bromine decolourization provides evidence of unsaturation in an appropriate test. It is not proof that an unknown sample is specifically ethene.

2.4 functional group. functional group means An atom group determining characteristic reactions.

3.1 Product 0.12 mol; ethene remaining 0.08 mol. Atoms add across C=C with no small molecule replaced in this stated reaction. This is a paper model, not an instruction to handle bromine.