For Question No. 55 to 58

(A) Statement–1 is True, Statement– 2 is True; Statement–2 is a correct explanation for Statement–1

(B) Statement – 1 is True, Statement– 2 is True; Statement – 2 is NOT a correct explanation for Statement– 1

(C) Statement – 1 is True, Statement – 2 is False

(D) Statement – 1 is False, Statement – 2 is True

55. **Statement I** : Addition of bromine to trans-2-butene yields meso-2, 3-dibromo butane.
Statement II : Addition of bromine to an alkene is an electrophilic addition. **(2001)**

56. **Statement I** : Dimethyl sulphide is commonly used for the reduction of an ozonide of an alkene to get the carbonyl compound.
Statement II : It reduces the ozonide giving water soluble dimethyl sulphoxide and excess of it evaporates. **(2001)**

57. What would be the major product in the following reaction ? **(2001)**

58. Consider the following reaction $H_3C-\underset{\underset{D}{|}}{C}H-\underset{\underset{CH_3}{|}}{C}H-CH_3 + \overset{\bullet}{B}r \longrightarrow X + HBr$

Identify the structure of the major product X : **(2002)**

(A) $H_3C-\underset{\underset{D}{|}}{C}H-\underset{\underset{CH_3}{|}}{C}H-\overset{\bullet}{C}H_2$ **(B)** $H_3C-\underset{\underset{D}{|}}{C}H-\overset{\bullet}{\underset{\underset{CH_3}{|}}{C}}-CH_3$

(C) $H_3C-\overset{\bullet}{\underset{\underset{D}{|}}{C}}-\underset{\underset{CH_3}{|}}{C}H-CH_3$ **(D)** $H_3C-\overset{\bullet}{C}H-\underset{\underset{CH_3}{|}}{C}H-CH_3$

59. Identify a reagent from the following list which can easily distinguish between 1-butyne and 2-butyne.

(A) bromine, CCl_4 **(B)** H_2, Lindlar catalyst **(2002)**

(C) dilute H_2SO_4, $HgSO_4$ **(D)** ammonical Cu_2Cl_2 solution

60. Identify, X Y and Z in the following synthetic scheme and write their structures.

$$CH_3CH_2-C\equiv C-H \xrightarrow[(ii)\ CH_3CH_2Br]{(i)\ NaNH_2} X \xrightarrow{H_2/Pd/BaSO_4} Y \xrightarrow{\text{Alkaline } KMnO_4} Z$$

Is the compound Z optically active? Justify your answer. **(2002)**