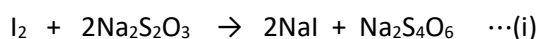


**Question 13:** A 150 ml solution of  $I_2$  is divided into two unequal parts. First part reacts with hypo solution in acidic medium. 15 ml of 0.4 M hypo was consumed. Second part was added with 100 ml of 0.3 M NaOH solution. The residual base required 10 ml of 0.3 M  $H_2SO_4$  solution for complete neutralization. What was the initial concentration of  $I_2$ ?

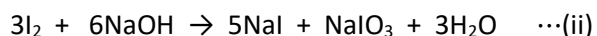
**ANSWER: OPTION 2**

The reaction is as follows:



Millimoles of  $Na_2S_2O_3$  consumed =  $15 \times 0.4 = 6$  m mol

Millimoles of  $I_2$  consumed = 3 m mol



Millimoles of  $I_2$  reacted with NaOH =  $(30 - 2 \times 3) / 2 = 12$  mmol

Total mmol of  $I_2$  consumed in reaction (i) and (ii)

$$= 3 + 12 = 15 \text{ mmol.}$$

**ANSWER=** Molarity of  $I_2 = 15/150 = 0.1M$