



$$\textcircled{2} \quad \frac{V_2 - 10}{40} + \frac{V_2 - V_4}{30} + \frac{V_2 - V_4}{20} + V_2 - 5 = 0$$

$$\Rightarrow \frac{3V_2 - 30 + 4V_2 - 4V_4 + 6V_2 - 6V_4 + 120V_2 - 600}{120} = 0$$

$$\Rightarrow 3V_2 - 30 + 4V_2 + 6V_2 + 120V_2 - 600 = 0 \quad [V_4 = 0]$$

$$\Rightarrow 133V_2 - 630 = 0$$

$$\therefore V_2 = 4.736$$

$$V_3 - 5 + \frac{V_3}{10} = 0$$

$$\Rightarrow \frac{10V_3 - 50 + V_3}{10} = 0$$

$$\Rightarrow 10V_3 - 50 + V_3 = 0$$

$$\Rightarrow 11V_3 = 50$$

$$\therefore V_3 = 4.545$$

\textcircled{A}

$$\textcircled{1} \quad \frac{v_1 - v_2}{40} + v_1 - 10 = 0 \quad \textcircled{1}$$

$$\frac{v_2 - v_1}{40} + \frac{v_2 - 20}{20} + \frac{v_2}{10} = 0$$

$$\Rightarrow \frac{v_2 - v_1 + 2v_2 - 40 + 4v_2}{40} = 0$$

$$\Rightarrow 7v_2 - v_1 - 40 = 0 \quad \textcircled{2}$$

From eqn-1,

$$\frac{v_1 - v_2}{40} + v_1 - 10 = 0$$

$$\Rightarrow \frac{v_1 - v_2 + 40v_1 - 400}{40} = 0$$

$$\Rightarrow 41v_1 - v_2 - 400 = 0$$

$$v_1 = 9.93$$

$$v_2 = 7.13 \quad \textcircled{+}$$

$$\textcircled{+}$$