

Answer To The Question No: 4

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$$\text{Local Gradient, } d_j = \frac{-dE}{\delta V_j} \begin{matrix} \nearrow \text{Overall error} \\ \searrow \text{transfer function} \end{matrix}$$
$$= e_j \phi'(V_j)$$

f layer:

$$\delta f_1 = e_{f1} \phi'(V_{f1})$$

$$\delta f_2 = e_{f2} \phi'(V_{f2})$$

$$\delta f_3 = e_{f3} \phi'(V_{f3})$$

h layer:

$$\delta h_1 = \phi'(V_{h1}) (\delta f_1 W_{f1h1} + \delta f_2 W_{f2h1} + \delta f_3 W_{f3h1})$$

$$\delta h_2 = \phi'(V_{h2}) (\delta f_1 W_{f1h2} + \delta f_2 W_{f2h2} + \delta f_3 W_{f3h2})$$

$$\delta h_3 = \phi'(V_{h3}) (\delta f_1 W_{f1h3} + \delta f_2 W_{f2h3} + \delta f_3 W_{f3h3})$$

$$\delta h_4 = \phi'(V_{h4}) (\delta f_1 W_{f1h4} + \delta f_2 W_{f2h4} + \delta f_3 W_{f3h4})$$

P layer:

$$\delta p_1 = \phi'(V_{p1}) (\delta h_1 W_{h1p1} + \delta h_2 W_{h2p1} + \delta h_3 W_{h3p1} + \delta h_4 W_{h4p1})$$

$$\delta p_2 = \phi'(V_{p2}) (\delta h_1 W_{h1p2} + \delta h_2 W_{h2p2} + \delta h_3 W_{h3p2} + \delta h_4 W_{h4p2})$$

$$\delta p_3 = \phi'(V_{p3}) (\delta h_1 W_{h1p3} + \delta h_2 W_{h2p3} + \delta h_3 W_{h3p3} + \delta h_4 W_{h4p3})$$

$$\delta p_4 = \phi'(V_{p4}) (\delta h_1 W_{h1p4} + \delta h_2 W_{h2p4} + \delta h_3 W_{h3p4} + \delta h_4 W_{h4p4})$$

$$\delta p_5 = \phi'(V_{p5}) (\delta h_1 W_{h1p5} + \delta h_2 W_{h2p5} + \delta h_3 W_{h3p5} + \delta h_4 W_{h4p5})$$

m layer:

$$\delta m_1 = \phi'(v_{m_1}) (\delta p_1 w_{p_1} m_1 + \delta p_2 w_{p_2} m_1 + \delta p_3 w_{p_3} m_1 + \delta p_4 w_{p_4} m_1 + \delta p_5 w_{p_5} m_1)$$

$$\delta m_2 = \phi'(v_{m_2}) (\delta p_1 w_{p_1} m_2 + \delta p_2 w_{p_2} m_2 + \delta p_3 w_{p_3} m_2 + \delta p_4 w_{p_4} m_2 + \delta p_5 w_{p_5} m_2)$$

$$\delta m_3 = \phi'(v_{m_3}) (\delta p_1 w_{p_1} m_3 + \delta p_2 w_{p_2} m_3 + \delta p_3 w_{p_3} m_3 + \delta p_4 w_{p_4} m_3 + \delta p_5 w_{p_5} m_3)$$

$$\delta m_4 = \phi'(v_{m_4}) (\delta p_1 w_{p_1} m_4 + \delta p_2 w_{p_2} m_4 + \delta p_3 w_{p_3} m_4 + \delta p_4 w_{p_4} m_4 + \delta p_5 w_{p_5} m_4)$$

$$\delta m_5 = \phi'(v_{m_5}) (\delta p_1 w_{p_1} m_5 + \delta p_2 w_{p_2} m_5 + \delta p_3 w_{p_3} m_5 + \delta p_4 w_{p_4} m_5 + \delta p_5 w_{p_5} m_5)$$

$$\delta m_6 = \phi'(v_{m_6}) (\delta p_1 w_{p_1} m_6 + \delta p_2 w_{p_2} m_6 + \delta p_3 w_{p_3} m_6 + \delta p_4 w_{p_4} m_6 + \delta p_5 w_{p_5} m_6)$$