(A) $\frac{\partial L}{\partial a_j^{l+1}} \overset{?}{\propto} \frac{\partial L}{\partial a_i^{l}}$ where $a_j^{l+1} = \sigma(z_j^l)$

$\frac{\partial L}{\partial z_j^l}$ signal for j-th node of layer l computing $\sigma()$ in

$$\boxed{\frac{\partial L}{\partial a_i^l} = \sum_{\forall a_j^{l+1}} \frac{\partial L}{\partial a_j^{l+1}} \cdot \frac{\partial a_j^{l+1}}{\partial z_j^l} \cdot \frac{\partial z_j^l}{\partial a_i^l}}$$

(B) $$\boxed{\frac{\partial L}{\partial z_j^l} = \frac{\partial L}{\partial a_j^{l+1}} \cdot \frac{\partial a_j^{l+1}}{\partial z_j^l}}$$ (the first two terms of A.)

(C) $$\boxed{\frac{\partial L}{\partial w_{ij}^l} = \frac{\partial L}{\partial z_j^l} \cdot \frac{\partial z_j^l}{\partial w_{ij}}}$$

$$\frac{\partial L}{\partial z_{j}^{l+1}} \quad \frac{\partial z_{j}^{l+1}}{\partial a_j^{l+1}} \cdot \frac{\partial a_j^{l+1}}{\partial z_j^l}$$

$$\frac{\partial L}{\partial z_j^{l+1}} w_{ij}^{l+1} \cdot \sigma'(z_j^l)$$

$$\boxed{\frac{\partial L}{\partial b_j^l} = \frac{\partial L}{\partial z_j^l} \cdot \frac{\partial z_j^l}{\partial b_j^l}}$$