

$$\begin{aligned}
\text{a)} \quad & \overline{\overline{B(A \oplus C) \vee D \overline{A \oplus C}}} = \overline{\overline{B} \vee \overline{A \overline{C}} \vee \overline{A \overline{C}} \vee \overline{D} \vee \overline{A \overline{C}} \vee \overline{A \overline{C}}} = \\
& = B \vee \overline{A \overline{C}} \overline{A \overline{C}} \vee \overline{D} \vee \overline{A \overline{C}} \vee \overline{A \overline{C}} = B \vee (\overline{A} \vee C)(A \vee \overline{C}) \vee \overline{D} \vee \overline{A \overline{C}} \vee \overline{A \overline{C}} = \\
& = B \vee A \overline{A} \vee \overline{A \overline{C}} \vee A \overline{C} \vee C \overline{C} \vee \overline{D} \vee \overline{A \overline{C}} \vee \overline{A \overline{C}} = B \vee 0 \vee \overline{A \overline{C}} \vee A \overline{C} \vee 0 \vee \overline{D} \vee \overline{A \overline{C}} \vee \overline{A \overline{C}} = \\
& = B \vee \overline{A \overline{C}} \vee A \overline{C} \vee \overline{D} \vee \overline{A \overline{C}} \vee \overline{A \overline{C}} = B \vee \overline{A}(C \vee \overline{C}) \vee A(C \vee \overline{C}) \vee \overline{D} = \\
& = B \vee (\overline{A} \cdot 1) \vee (A \cdot 1) \vee \overline{D} = B \vee \overline{A} \vee A \vee \overline{D} = B \vee 1 \vee \overline{D} = 1
\end{aligned}$$

$$\begin{aligned}
\text{b)} \quad & \overline{\overline{B \vee (A \oplus C) D} \vee \overline{A \oplus C}} = \overline{\overline{B} \overline{A \overline{C}} \vee \overline{A \overline{C}} \overline{D} \overline{A \overline{C}} \vee \overline{A \overline{C}}} = \overline{\overline{B} \overline{A \overline{C}} \overline{A \overline{C}} \overline{D} (A \overline{C} \vee \overline{A \overline{C}})} = \\
& = B(\overline{A} \vee C)(A \vee \overline{C}) \overline{D} (A \overline{C} \vee \overline{A \overline{C}}) = B(A \overline{A} \vee \overline{A \overline{C}} \vee A \overline{C} \vee C \overline{C}) \overline{D} (A \overline{C} \vee \overline{A \overline{C}}) = \\
& = B(0 \vee \overline{A \overline{C}} \vee A \overline{C} \vee 0) \overline{D} (A \overline{C} \vee \overline{A \overline{C}}) = B(\overline{A \overline{C}} \vee A \overline{C}) \overline{D} (A \overline{C} \vee \overline{A \overline{C}}) = \\
& = B \overline{D} (A \overline{A \overline{C}} \vee \overline{A \overline{C}} \overline{C} \vee A \overline{C} \overline{C} \vee A \overline{A \overline{C}}) = B \overline{D} (0 \vee 0 \vee 0 \vee 0) = B \overline{D} \cdot 0 = 0
\end{aligned}$$