

DIRECTIONS: A, B, C = true

X, Y, Z = false

Using the above truth values, figure out whether the following sentences are true or false.

- 1) $\sim A \vee B$
- 2) $\sim(A \vee B)$
- 3) $(A \ \& \ X) \vee B$
- 4) $(B \ \& \ C) \vee (Y \ \& \ Z)$
- 5) $(A \ \rightarrow B) \rightarrow Z$
- 6) $\sim(A \ \rightarrow B) \rightarrow \sim Z$
- 7) $\sim(X \ \& \ \sim Y) \vee (B \ \& \ \sim C)$
- 8) $\sim[(B \ \& \ C) \ \& \ \sim(C \ \& \ B)]$
- 9) $\sim[(A \ \vee \ \sim C) \ \vee \ (C \ \vee \ \sim A)]$
- 10) $[A \ \& \ (B \ \vee \ C)] \ \& \ \sim[(A \ \& \ B) \ \vee \ (A \ \& \ C)]$
- 11) $[A \ \rightarrow (B \ \rightarrow Y)] \rightarrow X$
- 12) $[(A \ \& \ X) \ \rightarrow C] \rightarrow [(A \ \rightarrow X) \ \rightarrow C]$
- 13) $[(A \ \& \ X) \ \rightarrow Y] \rightarrow [(X \ \rightarrow A) \ \rightarrow (A \ \rightarrow Y)]$
- 14) $[(A \ \& \ X) \ \vee \ (\sim A \ \& \ \sim X)] \rightarrow [(A \ \rightarrow X) \ \& \ (X \ \rightarrow A)]$
- 15) $\{[A \ \rightarrow (B \ \rightarrow C)] \rightarrow [(A \ \& \ B) \ \rightarrow C]\} \rightarrow [(Y \ \rightarrow B) \ \rightarrow (C \ \rightarrow Z)]$
- 16) $\{[(X \ \rightarrow Y) \ \rightarrow Z] \rightarrow [Z \ \rightarrow (X \ \rightarrow Y)]\} \rightarrow [(X \ \rightarrow Z) \ \rightarrow Y]$
- 17) $\sim\{[(\sim A \ \& \ B) \ \& \ (\sim X \ \& \ Z)] \ \& \ \sim[(A \ \& \ \sim B) \ \vee \ \sim(\sim Y \ \& \ \sim Z)]\}$