Q-3

$\neg((A \Rightarrow \neg B) \vee \neg(C \wedge \neg D))$

$\equiv \neg((\neg A \vee \neg B) \vee \neg(C \wedge \neg D))$ $(\because a \Rightarrow b \equiv \neg a \vee b)$

$\equiv \neg((\neg A \vee \neg B) \vee (\neg C \vee D))$ $(\because \neg(a \wedge b) \equiv \neg a \vee \neg b)$

$\equiv \neg(\neg A \vee \neg B) \wedge \neg(\neg C \vee D)$ $(\because \neg(a \vee b) \equiv \neg a \wedge \neg b)$

$\equiv (A \wedge B) \wedge (C \wedge \neg D)$ $(\because \neg(a \vee b) \equiv \neg a \wedge \neg b)$

$\equiv A \wedge B \wedge C \wedge \neg D$ — NNF

— (1)

Thus (1) is the NNF (Negation Normal Form) of given expression