For relation $LMNOPQRST$

W = $\{\mathrm{LRP} \rightarrow Q\ , LR \rightarrow ST, M \rightarrow LO, MR \rightarrow N\}$

First from these FDs we know that M, R and P must be in the key since they only appear on the left side of the FD.

$MRP^{+} = \{M, R, P, L, O, Q, N, S, T\}$

The key is MRP.

a. The FDs that violate BCNF are

All of them.

b. Employ BCNF decomposition until the relations are lossless, non-redundant

We start with $LRP \rightarrow Q$.

$LRP^{+} = \{L, R, P, Q, S, T\}$

So $R_1 = (L, R, P, Q, S, T)\ and\ R_2 = (L, M, N, O, P, R)$

After decomposition, the FDs projected will be $LPR \rightarrow Q\ and\ LR \rightarrow ST$. The rest of the FD will stay since they have M on the LHS.

R_1 does not satisfy the BCNF since $LR \rightarrow ST$ and LR is not the super-key.

Decompose R_1 via $LR \rightarrow ST$

$LR^{+} = \{L, R, S, T\}$

So $R_1 = (L, R, S, T)$ $R_3 = (L, R, P, Q)$ and both satisfies BCNF since only one FD is projected on each.

Onto R_2, we decompose via $MR \rightarrow N$

$MR^{+} = \{M, R, N, L, O\}$

So $R_2 = (M, R, N, L, O)$ $R_4 = (M, P, R)$

No FD is projected onto R_4 since MRP is only on the left side of FDs.

All FD goes to R_2

R_2 does not satisfy BCNF because $M \rightarrow LO$

Decompose R_2 via $M \rightarrow LO$

$M^+ = \{M, L, O\}$

So $R_2 = (M, L, O)$ and $R_5 = (M, R, N)$

Again, the FD projects to R_2 is $M \rightarrow LO$ and R_4 $MR \rightarrow N$.

Both satisfy BCNF.

In conclusion,

$R_1 = (L, P, Q, R, S, T)$ $R_2 = (L, M, O)$ $R_3 = (L, P, Q, R)$ $R_4 = (M, P, R)$ $R_5 = (M, N, R)$