First, we look for dominated strategies:

T is dominated for the row player; no strategy is dominated for the column player.

We look for best responses for the row player:

BR(L) = B  
BR(C) = M  
BR(R) = M

We look for best responses for the column player:

BR(M) = L  
BR(B) = C

There are no Nash equilibria in pure strategies since there is no pair of strategies (s* _r, s* _c) such that BR_c(s* _r) = s* _c and BR_r(s* _c) = s* _r.

Now, we look for mixed strategy NE. Definition: a support of a mixed strategy is the set of pure strategies that is played with non-zero probability in that mixed strategy.

Enumerate all non-trivial possible supports for the row player:

{M,B}

Enumerate all non-trivial possible supports for the column player:

{L,C,R}  
{L,C}   
{C,R}   
{L,R}

Fundamental result: for two mixed strategies (Mr, Mc) to be in equilibrium, it must be the case that each strategy in the support of that player’s strategy, attains the same expected utility against any strategy in the support of the other player’s mixed strategy (I will denote this as the indifference conditions).

So, we try all possible pairs of supports to see if the indifference conditions hold:

- {M,B} / {L,C,R}

p -> probability of playing M
1- \( p \) -> probability of playing B
q -> probability of playing L
r -> probability of playing C
1 – p – r -> probability of playing R

**Indifference conditions:**

\[
p - 2(1-p) = -4p + 6(1-p) = -p - (1-p)
\]

Over-determined set of equations \( \Rightarrow \) no solution for \( p \).
No mixed strategy NE with above as a support.

- \( \{M,B\} / \{L,C\} \)

p -> probability of playing M
1- p -> probability of playing B
q -> probability of playing L
1-q -> probability of playing C

**Indifference conditions:**

\[
p - 2(1-p) = -4p + 6(1-p)
-2q + 3(1-q) = 3q + 2(1-q)
\]

Solutions: \( p = \frac{8}{13}, q = \frac{1}{6} \)

This is a necessary, but not sufficient condition for this to be a MSNE. It is possible for there to be a profitable deviation (i.e. one which increases EU) to a strategy outside the support, so we must check that.

Now check whether it is a profitable deviation for column player to switch to R:
EU of playing R versus \{play M with probability 8/13, play B with probability 5/13\} is \( \frac{8}{13} \times (-1) + \frac{5}{13} \times (-1) = -1 \)

EU of playing \{play L with probability 1/6, play C with probability 5/6\} versus \{play M with probability 8/13, play B with probability 5/13\} is \( \frac{1}{6} \times \frac{8}{13} \times 1 + \frac{1}{6} \times \frac{5}{13} \times (-2) + \frac{5}{6} \times \frac{8}{13} \times (-4) + \frac{5}{6} \times \frac{5}{13} \times 6 = -\frac{2}{13} \)

So there is not a profitable deviation to a strategy outside the support

\{play M with probability 8/13, play B with probability 5/13\} and \{play L with probability 1/6, play C with probability 5/6\} is a mixed strategy NE

- \( \{M,B\} / \{C,R\} \)

M dominates B so, support is effectively \( \{M\} / \{C,R\} \)
But there are no pure strategy NE, so a MSNE one of whose strategies has as its support \( \{M\} \) is not possible.

- \( \{M,B\} / \{L,R\} \)

p -> probability of playing M
1- p -> probability of playing B
q -> probability of playing L
1-q -> probability of playing R

**Indifference conditions:**

\[
p - 2(1-p) = -p - (1-p)
-2q + 5(1-q) = 3q + 4(1-q)
\]

Solutions \( p = \frac{1}{3}, q = \frac{1}{6} \)
Now check whether it is a profitable deviation for column player to switch to C:
EU of playing C versus \{\text{play M with probability 1/3, play B with probability 2/3}\} is \(1/3*(-4) + 2/3*(6) = 8/3\)
EU of playing \{\text{play L with probability 1/6, play C with probability 5/6}\} versus \{\text{play M with probability 1/3, play B with probability 2/3}\} is \((1/6)*(1/3)*(1)+(1/6)*(2/3)*(-2)+(5/6)*(1/3)*(-4)+(5/6)*(2/3)*(6) = 37/18\)
\(8/3 > 37/18\), so there is a profitable deviation to a strategy outside the support

No mixed strategy with \{M,B\} / \{L,R\} as supports

The game has no pure strategy Nash equilibria and one mixed strategy Nash equilibria:
\{\text{play M with probability 8/13, play B with probability 5/13}\} and \{\text{play L with probability 1/6, play C with probability 5/6}\}