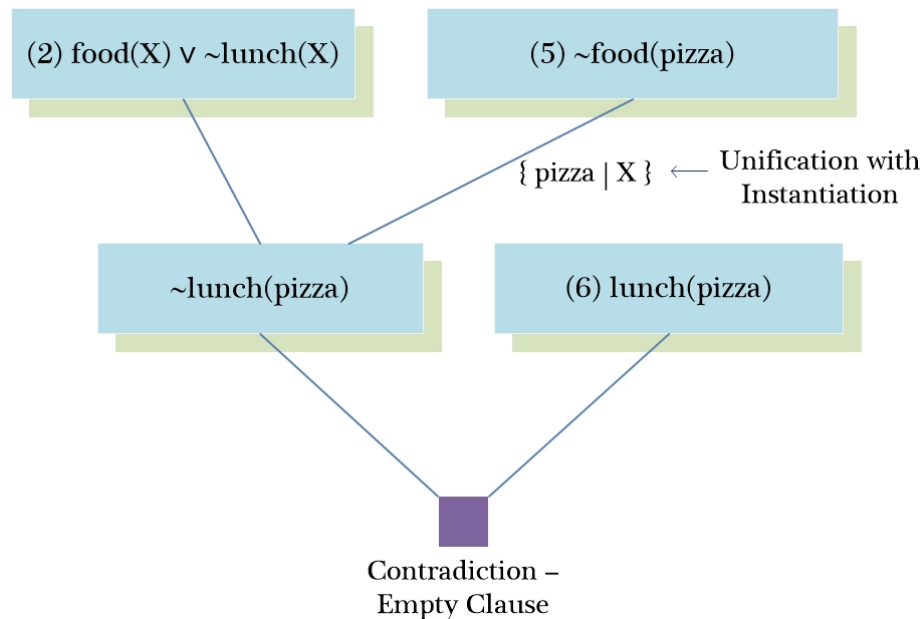


**Example : 1** Give deduction trees of resolution for [a] using (2) and (5), [b] using (1) and (3) for the following the set of clauses and show each level of, unification with instantiation.

- (1)  $\text{meal}(X) \vee \sim\text{food}(X)$
- (2)  $\text{food}(X) \vee \sim\text{lunch}(X)$
- (3)  $\text{food}(\text{burger})$
- (4)  $\sim\text{meal}(\text{burger})$
- (5)  $\sim\text{food}(\text{pizza})$
- (6)  $\text{lunch}(\text{pizza})$

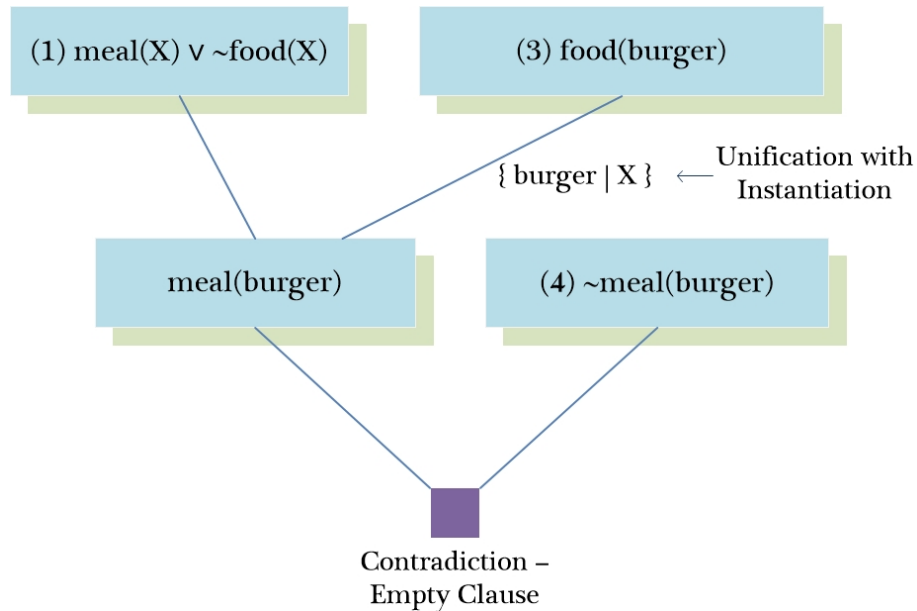
**Answer :**

**[a] using (2) and (5)**



**Resolving** (2)  $\text{food}(X) \vee \sim\text{lunch}(X)$  and (5)  $\sim\text{food}(\text{pizza})$ , we can cancel out two **unified** and conflicting terms  $\text{food}(X)$  and  $\sim\text{food}(\text{pizza})$  with instantiating variable **X to value pizza**. Therefore  $\sim\text{lunch}(X)$  would also become  $\sim\text{lunch}(\text{pizza})$ . Again we can take clause (6)  $\text{lunch}(\text{pizza})$  which unifies with  $\sim\text{lunch}(\text{pizza})$  and canceling out these two clauses will give us an empty clause.

**[b] using (1) and (3)**



**Resolving** (1)  $\text{meal}(X) \vee \sim \text{food}(X)$  and (3)  $\text{food}(\text{burger})$ , we can cancel out two **unified** and conflicting terms  $\text{food}(X)$  and  $\sim \text{food}(\text{burger})$  with instantiating variable **X to value burger**. Therefore  $\text{meal}(X)$  would also become  $\text{meal}(\text{burger})$ . Again we can take clause (4)  $\sim \text{meal}(\text{burger})$  which unifies with  $\text{meal}(\text{burger})$  and canceling out these two clauses will give us an empty clause.