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a. The statement is true because every non-prime attribute is fully functionally dependent on the primary key thus the removal of any attribute from the superkey will cause the FD not to hold anymore.

eg: {invoice-number, pet-name} removing an attribute from this set will cause the FD not to hold anymore.

b. 3NF

The diagram illustrates three functional dependencies (FDs) in a 3NF schema:

- fd1:** A box containing invoice-number, pet-name, date, owner-name, and treatment. Below the box, a line connects the first two attributes to the last three, with an upward arrow pointing to the last three attributes.
- fd2:** A box containing owner-name and owner-address. Below the box, a line connects the first attribute to the second, with an upward arrow pointing to the second attribute.
- fd3:** A box containing treatment and amount. Below the box, a line connects the first attribute to the second, with an upward arrow pointing to the second attribute.

2. Creating an assertion

```
CREATE ASSERTION No-Emp-Constraint CHECK  
CHECK (NOT EXISTS ( SELECT dept-no, COUNT(*)  
FROM EMPLOYEE AS E, DEPARTMENT  
AS D  
WHERE E.dept-no = D.dept-no  
GROUP BY dept-no  
HAVING COUNT(*) < 30 ));
```