PES University, Bangalore

Department of Computer Science and Engineering

Automata Formal Languages & Logic

Assignment for First Order Logic- Quantifiers, Terms, Axioms

1. Consider the following axioms:

1. Anyone who rides any Harley is a rough character.
2. Every biker rides [something that is] either a Harley or a BMW.
3. Anyone who rides any BMW is a yuppie.
4. Every yuppie is a lawyer.
5. Any nice girl does not date anyone who is a rough character.
6. Mary is a nice girl, and John is a biker.
7. If John is not a lawyer, then Mary does not date John.

2. Consider the following axioms:

1. Every child loves anyone who gives the child any present.
2. Every child will be given some present by Santa if Santa can travel on Christmas eve.
3. It is foggy on Christmas eve.
4. Anytime it is foggy, anyone can travel if he has some source of light.
5. Any reindeer with a red nose is a source of light.
6. If Santa has some reindeer with a red nose, then every child loves Santa.

3. Consider the following axioms:

1. Every investor bought [something that is] stocks or bonds.
2. If the Dow-Jones Average crashes, then all stocks that are not gold stocks fall.
3. If the T-Bill interest rate rises, then all bonds fall.
4. Every investor who bought something that falls is not happy.
5. If the Dow-Jones Average crashes and the T-Bill interest rate rises, then any investor who is happy bought some gold stock.