

criticize (Raj, rekha)

Determine who is Knave and who is Knight, using propositional logic.

- (d) Can we represent belief using semantic net? If yes, then encode this knowledge [2]  
(belief): "Pankaj believes that pizza is tasty". If no, then suggest the way to represent given belief.
- (e) What is difference between monotonic and non monotonic logic? [2]
- (f) What is conflict resolution in Forward chaining? List out different conflict resolution strategies. [2]

**Q.2** Attempt **Any Two** from the following questions. [12]

- (a) *Raj is a professor. All professors are people. Rekha is the Principal. Principals are professors. All professors consider the principal a friend or don't know him. Everyone is a friend of someone. People only criticize people that are not their friends. Raj criticized Rekha.* [6]

Represent the given statements using predicate logic and apply forward or backward chaining to prove that "Rekha is not friend of Raj"

- (b) Represent the following sentences using FOL and prove using resolution that [6]  
"Every loon eats fish."

1. Every bird sleeps in some tree.
2. Every loon is a bird, and every loon is aquatic.
3. Every tree in which any aquatic bird sleeps is beside some lake.
4. Anything that sleeps in anything that is beside any lake eats fish.

- (c) What is the need of a partitioned semantic net? Generate partitioned semantic net [6]  
for following: "Every student loves to party"

- 1 Professor (Raj)
- 2  $\forall x$  Professor(x)  $\rightarrow$  people(x)
- 3 principal (Rekha)
- 4  $\forall x$  Principal(x)  $\rightarrow$  Professor(x)
- 5  $\forall x$  Professor(x)  $\wedge$  principal(y)  $\rightarrow$   
friend(x, y)  $\vee$  don't know(x, y)
- 6  $\forall x \exists y$  friend(x, y)
- 7  $\forall x$  people(x)  $\wedge$  criticize(x, y)  $\rightarrow$   $\neg$  friend(x, y)
- 8 criticize (Raj, rekha)

- 1 Professor (Raj)
- 2  $\neg$  Professor (a)  $\vee$  people(a)
- 3 principal (Rekha)
- 4  $\neg$  principal (b)  $\vee$  professor(b)
- 5  $\neg$  professor(c)  $\vee$   $\neg$  principal(d)  $\vee$   
friend(c, d)  $\vee$  don't know(c, d)
- 6 friend(e, f)
- 7  $\neg$  people(g)  $\vee$   $\neg$  friend(h)  $\vee$   $\neg$  criticize(g, h)
- 8 criticize (Raj, Rekha)



Resolution

friend (Rakha, Raj)

⑨ friend (Rakha, Raj) ⑦

⑧ people  $\vee$  criticize (g, h)

② people

① professor  
 $\phi$

so proven that Rakha is not friend of Raj.

Backward

7 friend (Raj, Rekha)

people (Rekha)

criticize (Raj, Rekha)

professor (Rekha)

principal (Rekha)

Forward

③

④

②

⑧

⑦

7 friend (Raj, Rekha)