

MCA (III YEAR)
Term-End Examination
December, 2011

CS-14 : INTELLIGENT SYSTEMS

Time : 3 hours

Maximum Marks : 75

Note : Question number 1 is **compulsory**. Attempt **any three** questions from remaining **four** questions.

1. Answer following questions briefly :

- (a) What is State Space Representation? Explain with example. 5
- (b) Differentiate between forward and backward reasoning. 5
- (c) What is non-monotonic reasoning? Explain with example. 5
- (d) Briefly explain the following Search Techniques : 15
 - (i) AO* Search Algorithm
 - (ii) Constraint Satisfaction
 - (iii) Means- Ends Analysis
 - (iv) A* Search
 - (v) Depth First Search (DFS).

2. (a) Discuss Conceptual Dependency (CD) as a technique for Knowledge Representation. Represent the sentence "*Arun returned book in the Library*" in CD? 8
- (b) What is a Semantic Net ? Draw a Semantic Net representation for the fact "*Akbar was a King where as Birbal was a Minister*". 7
3. (a) Represent the following facts in First Order Predicate Logic (FOPL) : 10
 - (i) Kaul was a singer.
 - (ii) Kaul was Born in 1957 AD.
 - (iii) All singers were Japanese.
 - (iv) Tsunami came in Japan in 2011.
 - (v) All singers died when Tsunami came in Japan.
- (b) Convert all the above five facts (of part (a)) into Conjunctive Normal Form (CNF). 5
4. (a) Write a LISP Programme to find the maximum of the three numbers. 5
- (b) What is an Expert System? What are different components of Expert System ? Briefly discuss the Expert System Development Life Cycle (ESDLC). 10

5. Write short notes on *any three* of the following : 3x5=15

- (a) MIN - MAX Search Strategy.
 - (b) Frame as a tool for Knowledge Representation.
 - (c) Control Strategies.
 - (d) Genetic Algorithms.
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