16116(J) June-(6

B. Tech 6th Semester Examination

Artificial Intelligence (NS)

CS-324/IT-323

Time: 3 Hours

Max. Marks: 100

The candidates shall limit their answers precisely within the answerbook (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Attempt five questions in all by selecting one question from each of the section A, B, C and D and all the sub-parts of section E.

SECTION - A

- (a) Write algorithm for Hill Climbing Search. Discuss the problem of local maximum and ridge in Hill Climbing Search procedure. (10)
 - (b) Discuss the technique of Means-End Analysis. What can be the problems in applying this algorithm? (10)
- (a) What is Predicate Logic? With suitable examples, explain the steps needed to convert a WFF in predicate logic to its equivalent clause form. (10)
 - (b) Compare Forward reasoning Vs Backward reasoning. (10)

SECTION - B

- 3. (a) What are the most commonly used Lisp functions? (10)
 - (b) What is an anonymous variable in PROLOG? Discuss the scope of an anonymous variable. (10)

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- 4. (a) Define artificial neural network. What is meant by multilayer ANN? (10)
 - (b) Discuss a few tasks that can be performed by a back propagation network. (10)

SECTION - C

- 5. Name and describe the main features and working of Genetic Algorithms (GA). (20)
- 6. What is the purpose of expert system MYCIN? Explain how uncertainty is propagated through a chain of rules during a consultation with an expert system which is based on the MYCIN architecture. (20)

SECTION - D

- 7. (a) What do you understand by SWARM Intelligence? What is the basic idea behind the notion of SWARM Intelligence? (10)
 - (b) Explain and discuss Ant Colony system and its working. (10)
- 8. (a) Given the grammar and lexicon below, show the final chart for the following sentence after applying the bottom-up chart parser. Remember that the final chart contains all edges added during the parsing process.

S→VP

VP→Verb NP

NP→NP PP

NP→Det Noun

PP→Prep Noun

Det→the

Verb→Find

Prep→in

Noun→men | suits

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(b) What is ELIZA? Write a short note on ELIZA along with necessary illustrations. (10)

SECTION - E

- 9. (a) Differentiate between Heuristic and Brute Force search.
 - (b) What is the difference between Procedural knowledge and Declarative knowledge?
 - (c) Explain rules of Inference.
 - (d) Describe the type of programming problems for which LISP is well suited.
 - (e) Differentiate Cut predicate and Fail predicate in PROLOG.
 - (f) What is Boltzman machine?
 - (g) Write short note on Genetic operators.
 - (h) What should be the characteristics of an expert system?
 - (i) What is PSO algorithm?
 - (j) What is difference between top down and bottom up parsing? (10×2=20)