

Roll No.

67143

**MCA 3rd Semester (With New Notes)
Examination – November, 2017**

ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS

Paper : MCA-303

Time : Three Hours] [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting at least *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Compulsory Questions :

- (a) What is production system ? Name its components also.
- (b) What is admissibility of an algorithm ?
- (c) What is Unification ? Give example.
- (d) Define Partitioned semantic net. Give example also.
- (e) Discuss the role of certainty factor in knowledge representation ?

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- (f) Differentiate supervised and unsupervised learning ?
- (g) Name the functions used to add the data in knowledge base in Prolog with example.
- (h) Discuss the structure of Prolog program.

UNIT – I

2. Differentiate blind search and heuristic search. When does blind search become better than heuristic search ? Also discuss the properties of heuristic search algorithms ?
3. Why is it important that an expert system be able to explain the why and how question related to problem solving ? Discuss the role of inference engine in expert system to solve the problem.

UNIT – II

4. How ESDLC is related with software engineering ? Why prototype construction and formalization are important phases in ESDLC. Explain.
5. What is resolution ? Discuss its different types. Explain the use of unification algorithm to prove the concept of resolution with example.

UNIT – III

6. What are the differences between biological and artificial neurons ? What is the role of back propagation network in ANN ? Discuss with an example.

7. (a) What is fuzzy set ? What is the membership function of a fuzzy set ? Can a fuzzy membership be TRUE and FALSE at the same time ? Illustrate with example.
- (b) Discuss the inference process for fuzzy expert system.

UNIT – IV

8. What is matching ? Discuss the role of Backtracking in matching ? How fail and cut predicates are used in backtracking ? Give example also.
9. Explain with examples :
 - (i) Compound object
 - (ii) Recursion
 - (iii) Dynamic database
 - (iv) Types and components of list