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Roll No. : .....

**333733(22)**

**B. E. (Seventh Semester) Examination, Nov.-Dec., 2021**

**(New Scheme)**

**(IT Engineering Branch)**

**ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Part (a) of each question is compulsory.  
Attempt remaining part (b), (c) and (d).  
Attempt any two from each question.***

**Unit-I**

1. (a) What is state space search? 2
- (b) Explain AO\* with proper example and algorithm. 7

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- (c) Explain Min Max problem with proper example. 7
- (d) Explain Water Jug problem with proper production rules and with solution steps. 7

### Unit-II

2. (a) Name different techniques which are used in knowledge representation. 2
- (b) What is propositional logic? Differentiate between predicate logic and propositional logic. 7
- (c) Explain constraint satisfaction problem with some example. 7
- (d) Translate the given sentences using Conceptual Dependency Technique. 7
- (i) Rohan took the book from Radhika
- (ii) Amit fertilized the field
- (iii) Akash eat an ice-cream with a spoon
- (iv) Rahul is taller than Prakash

### Unit-III

3. (a) Define probability factor. 2

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- (b) Explain Bay's theorem with proper example. 7
- (c) What is learning? Explain different types of learning. 7
- (d) What is transaction Network? Explain RTN with suitable example. 7

### Unit-IV

4. (a) What is Machine Translation? 2
- (b) Explain parsing with suitable tree structure and grammar. 7
- (c) Define Goal Stack Planning with block worlds problem along with example. 7
- (d) Explain Water Jug Problem with proper production rules and with solution steps. 7

### Unit-V

5. (a) What is knowledge base? 2
- (b) Describe the architecture of expert system. Emphasize on each component. 7
- (c) Explain the knowledge acquisition process. 7

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(d) Write short notes on : (any two) 7

(i) History of Expert System

(ii) Application area of Expert System

(iii) List 5 expert system with their features