[Total No. of (i) Printed Pages 4 (ii) Questions 9]

Sub Code : 3615 (1048) **Exam Code :** 0460

Exam : M.Sc. Information Technology 2ndSemester

Subject : Artificial Intelligence

Paper : M.S-67

Time : 3 Hours ***Maximum Marks : 80***

Note: Attempt **five** questions in all. Question **No. 9** (**SECTION-E**) is compulsory and selecting **one** question each from **SECTIONS A** to **D**.

SECTION - A

1. (i) Discuss Turing test with an example. 6

(ii) Define State Space representation and give solution of the following problem stepwise using state space search :

You are given two jugs, a 4 litre one and a 3 litre one. Neither have any measuring marks on it. There is a pump that can be used to fill jug with water. How can you get exactly 2 litre of water into a 4 litre jug ? 10

P.T.O.

2. Discuss algorithms for Depth first search and A *. What are AND - OR graphs ?

6+6+4=16

SECTION - B

3. (i) Write short notes on : frames and predicate logic.

(ii) Consider the following sentences :

(a) Johan likes all kinds of food.

(b) Apples are food.

(c) Chicken is food.

(d) Anything anyone eats and is not killed by is food.

(e) Bill eats peanuts and is still alive.

(f) Sue eats everything Bill eats.

Prove that John likes peanuts using resolution. 8+8=16

4. Discuss Minimax search procedure with an example. Write in short for issues in knowledge representation. 8+8=16

SECTION - C

5. Discuss architecture of an expert system in detail. Discuss use of MYCIN as an expert system. 16

6. Explain basic tasks of Natural Language Processing. What are the difficulties with Natural Language Processing ? What is perception ? 6+6+4=16

SECTION - D

7. Write PROLOG example for Tower of Hanoi. Discuss PROLOG elementary data types and flow control. 8+8=16

8. Discuss PROLOG features for list and string manipulation with suitable examples. Give an example of sorting in PROLOG. 16

SECTION - E

(Compulsory)

9. (a) Discuss agent function.

(b) How to avoid ridge and plateau in hill climbing ?

(c) Define Horn's clause and convert to Clause form for :

$$\forall X(p(X) \rightarrow (q(X) \vee r(X)))$$

(d) List two differences between propositional logic and predicate logic. 4×4=16