Exam.Code:0917
Sub. Code: 6788

1078
B.E. (Computer Science and Engineering)
Fifth Semester
CS-503: Artificial Intelligence

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Write short note on:-

a) State the difference between agent function and agent program?

b) Compare and Contrast Classical logic and fuzzy logic-

c) Compare Forward and backward reasoning approach.

d) Define Heuristic Search. Write heuristic function for Tic-Tac-Toe problem.

e) Explain how Bayesian statistics provides reasoning under uncertainty? (5x2)

UNIT – I

II. a) Define artificial intelligence. Explain the necessary components to define an AI problem with example.

b) Explain how search can be used to solve constraint satisfaction problem such as N-queen problem. What difficulties arise when such problem become extremely large? What kind of methods can be applied to solve such large problems efficiently? (5,5)

III. a) Discuss Best First search. What are the problem characteristics you need to consider while choosing a search technique to solve the problem?

b) Define hill climbing. Write the algorithm for steepest ascent hill climbing. (5,5)

IV. a) Draw semantic network for following:

i) The dog bites a mail carrier.

ii) Every dog bites a mall carrier.

b) Discuss Alpha beta pruning in Minmax search procedure with help of suitable example. (4,6)

UNIT – II

V. The monkey-and-bananas problem is faced by a monkey with some bananas hanging out of reach from the celling. A box is available that will enable the monkey to reach the bananas If he climbs on it. Initially, the monkey is at **A**, the bananas at **B**, and the box at **C**. The monkey and box have height Low, but if the monkey climbs onto the

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box he will have height **High**, the same as the bananas. The actions available to the monkey Include **Go** from one place to another, **Push** an object from one place to another, **ClimbUp** onto or **ClimbDown** from an object, and **Grasp** or **Ungrasp** an object. Grasping results in holding the object if the monkey and object are in the same place at the same height.

a) Write down the initial state description.

b) Write down STRIPS-style definitions of the six actions.

c) Suppose the monkey want to fool people, who are off to tea, by grabbing bananas, but leaving the box in its original place.

Write this as a general goal in the language of situation calculus. Can this goal be solved by a STRIPS-style system? (10)

VI. a) With an application of your choice explain the various stages of Fuzzy Controller. Include the block diagram, fuzzy sets, membership functions that are being decided upon. Fuzzy rule base, the type of inference that is being carried out, and the defuzzifIcation process.

b) Write a short note on Decision tree based expert system. (6,4)

VII. a) Define expert system. Explain the working of MYCIN expert system.

b) Define agents with the help of example. Give PEAS description for Medical Diagnosis system. (7,3)

x-x-x