Exam.Code:0917
Sub. Code: 33436

2124

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 Section.

x-x-x

1. Briefly explain the following:
   (a) State space search
   (b) Knowledge representation
   (c) Forward vs Backward reasoning
   (d) Bayes Theorem
   (e) Agent Environment (5x2=10)

Section-A

2. What do you understand by Artificial Intelligence (AI)? What is the role of AI in Computer Systems? What are the applications of AI? Discuss. (10)
3. (a) What do you mean by Hill Climbing? Explain. (5)
   (b) A monkey is in a room containing a box and a bunch of bananas. The bananas are hanging from the ceiling out of reach of the monkey. What sequence of actions will allow the monkey to get the bananas? The monkey knows how to move around, carry other things, reach to bananas and wave the stick in the air. Use means-ends analysis to solve this problem. (5)
4. (a) What is a Script? Briefly explain the components of a Script. Convert the sentence "The spouse of every married person in the club is also in the club." into WFF. (5)
   (b) Briefly explain the Miniskey Frames. What are the advantages of a frame based knowledge representation? (5)

Section-B

5. What do you understand by an Expert System? Explain its different features. Enumerate the advantages and disadvantages of an expert system. Give examples of any two expert systems. (10)
6. (a) What are Intelligent Agents? Discuss the different types of Intelligent Agents in detail. (5)

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(b) Define the Planning problem. Briefly discuss the partial-order planning giving suitable example(s). (5)

7. (a) Explain briefly the concept of the Dempster-Shafer theory. (3)

(b) Define a Fuzzy set. What is the significance of Fuzzy logic technique? (3)

(c) Consider the following set of propositions:

Patient has spots

Patient has measles

Patient has high fever

Patient has previously been vaccinated against measles

Patient was recently bitten by a tick

Patient has an allergy

I. Create a network that defines the causal connections among these nodes.

II. Make it a Bayesian network by constructing the necessary conditional probability matrix. (4)

x-x-x