

T.E. SEM-VI / R-19 / S.H. 2024 / 05-12-2024

EC5

Paper / Subject Code: 89322 / Artificial Intelligence

Q.P. Code - 66041

(3 Hours)

[Total Marks: 80]

N.B.:

- (1) Question No 1 is Compulsory.
- (2) Attempt any three questions out of the remaining five.
- (3) All questions carry equal marks.
- (4) Assume suitable data, if required and state it clearly.

1. Attempt any Four:-

- (a) Discuss the historical evaluation of Artificial Intelligence. 05
- (b) State the relationship between agent and environment. 05
- (c) Explain the algorithm for breadth first search algorithm. 05
- (d) Explain process of knowledge engineering. 05
- (e) What is planning and explain need for planning? 05

Q2 a) List different types of environments and explain environment types for car driving, part picking robot, cross word puzzle and Soccer game applications. 10

Q2.b) Explain Goal and Utility based agents with block diagram and example 10

Q3 a) Explain A* algorithm using example 10

Q3 b) Compare informed and uninformed search in terms of parameters using knowledge, performance, completion, cost factor, time, direction implementation, efficiency, computational requirements, size of search problem 10

Q 4 (a) Consider following axioms. 10

All people who are graduating are happy.

All happy people smile.

Someone is graduating.

- i) Represent these axioms in FOL.
- ii) Convert each formula to CNF.
- iii) Prove that someone is smiling using resolution technique. Draw the resolution tree.

Q4 b) 10

i) Differentiate between backward and forward chaining.

ii) Write short note on PROLOG

Q5 a) What are belief networks? Explain steps to build belief network with an example. 10

Q5 b) Explain the conditional probability and its use in AI. 10

Q6 a) Explain total order and partial order planning with example. 10

Q6 b) Explain concept of supervised, unsupervised, semi-supervised and reinforcement learning with example 10

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