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M.Tech. (Sem. 3rd)

ARTIFICIAL INTELLIGENCE

SUBJECT CODE : CS – 510 (Elective – I & II)

Paper ID : [E0696]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours **Maximum Marks : 100**

Instructions to Candidates:

1) Attempt any **Five** questions.
2) **All** questions carry equal marks.

Q1) How can we classify different task domains of AI into different levels? And how their criteria of success are determined?

Q2) Why AI problem solving is termed as state space search? Find a good state space representation for Chess game problem.

Q3) What do you mean by Mean - ends Analysis strategy to solve AI problems? Show how Mean ends Analysis could be used to solve the problem of getting from one place to another, assuming that the available operators are Walk, Drive, Take the Bus, Take a Cab and Fly.

Q4) Write the Unification algorithm and trace its operation on each of the following pair of literals:

(a) *f(Marcus) and f(Caesar)*

(b) *f(Marcus, g(x, y)) and f(x, g(Caesar, Marcus))*

Q5) A problem solving search can proceed either in forward or in backward. What factors determine the choice of direction for a particular problem? Determine whether the search should proceed in forward or backward if search program is to be written for Water – Jug – Problem.

Q6) What is meant by Learning? Explain various methods of Learning with the help of a suitable example.

Q7) (a) Define the term Uncertainty. Discuss in brief the logical frameworks for handling problems posed by uncertainty.

(b) Discuss the role of Bayesian networks and Fuzzy Logic in AI systems.

Q8) Write a short notes on:

(a) Semantic Nets.

(b) Frames.

(c) Probabilistic Language Processing

(d) Horn's Clause.