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SC Assignment 1 (Mapping CO1)

What is Soft Computing? Write down Constituents of Soft Computing.

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- The idea of soft computing was initiated in 1981 when Lotfi A. Zadeth published his first paper on soft data analysis "What is Soft Computing", Soft computing. Springer-Velag Germany/USA 1997.].

- Zadeh, defined Soft Computing into one multidisciplinary system as the fusion of the fields of Fuzzy Logic, Neuro-Computing, Evolutionary & Genetic Computing and Probabilistic Computing.

- Soft computing is the fusion of methodologies designed to model and enable solutions to real world problems, which are not modeled or too difficult to model mathematically.

- The aim of Soft Computing is to exploit the tolerance for imprecision, uncertainty, approximate reasoning and partial truth in order to achieve close resemblance with human like decision making.

- "Soft computing is an emerging approach to computing which parallel the remarkable ability of the human mind to reason & learn in a environment of uncertainty & imprecision". – Zadeh

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Constituents of Soft Computing:-

- The Soft Computing consists of several computing paradigms mainly: Fuzzy Systems, Neural Networks and Genetic Algorithms.

Fuzzy set : For knowledge representation via fuzzy

Neural Networks : for learning & adaptation

Genetic Algorithms: For evolutionary computation

- Hybridization of these 3 creates a successful synergic effect; that is, hybridization creates a situation where different entities cooperate advantageously for a final outcome.

- In principal the constituent methodologies in Soft Computing are complementary rather than competi tive.

- The fuzzy set theory is an extension of classical set theory where elements have degrees of membership.

- Neural Computing is an information processing paradigm, inspired by biological system, composed of a large number of highly interconnected processing elements (neurons) working in unison to solve specific problems.

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- Genetic Algorithms simulate the survival of the fittest, among individuals over consecutive generation for solving a problem. Each generation consists of a population of character strings that are analogous to the chromosome in our DNA. DNA contains the genetic instructions used in the development & functioning of all known living organisms.