Paper code: ARD204	L	P	Credits
Subject: Introduction to Artificial Intelligence	4	0	4

Marking Scheme:
Teachers Continuous Evaluation: As per university examination norms from time to time.
End Term Theory Examination: As per university examination norms from time to time.

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks : AS per University norms

- There should be 9 questions in the end term examination question paper
- Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions.
- Apart from Question No. 1, the rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, students may be asked to attempt only 1 question from each unit.
- The questions are to be framed keeping in view the learning outcomes of course/paper. The standard/ level of the questions to be asked should be at the level of the prescribed textbooks.
- The requirement of (scientific) calculators/ log-tables/ data-tables may be specified if required

Course Outcomes[Bloom's Knowledge Level (KL)]:
CO1: Ability of students to understand the basics concepts of AI **[K1, K2]**
CO2: Ability of students to apply and analyze various search strategy in real life applications **[K2,K3,K4]**
CO3: Ability of students to examine various knowledge representation techniques **[K1,K2,K3]**
CO4: Ability of students to understand the advanced concept in AI **[K1, K2].**

CO/PO	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO1	3	3	3	3	1	-	-	-	-	-	-	2
CO2	3	3	2	3	1	-	-	-	1	-	1	2
CO3	3	3	2	3	1	-	-	-	1	-	2	3
CO4	3	3	3	3	1	1	-	-	3	2	3	3

Course Content	**No of lectures**
Unit I **Introduction to Artificial Intelligence:** AI problems. Foundation of AI and history of AI, Intelligent agents: Agents & Environments. The concept of rationality, the nature of environments, structure of agents, problem solving agents, problem formulation, Hard and Easy problem in AI, Problem characteristics and production system.	**[9]**
Unit II **Searching:** Searching for solutions, Uninformed search strategies-Breadth first search, depth first search, depth first iterative deepening, bidirectional search. Heuristic search strategy-Hill climbing, best first search, A*, AO* algorithms. Game Playing- Adversarial search, Games, Mini-max algorithm, alpha-beta pruning. Local search algorithms and optimization problems.	**[13]**

Unit III **Knowledge representation:** Approaches in knowledge representation, Issues in knowledge representation, Predicate logic, propositional logic, Procedural versus declarative knowledge, Logic programming, forward versus backward reasoning, resolution **Symbolic reasoning under uncertainty:** Non monotonic reasoning, Logic for non monotonic reasoning **Statistical reasoning:** Certainty factors & rule-based systems, Probability & Bayes' theorem, Bayesian networks, Dempster-Shafer-Theory	**[13]**
Unit IV **Advance topics in Artificial Intelligence:** Introduction to neural network, Fuzzy logic and Expert systems, Genetic algorithms, Introduction to natural language processing (NLP), Introduction to nature inspired computing-ACO, ABC algorithms.	**[13]**
Text Books: [T1] Russel S., Norvig P. (2003). Artificial Intelligence-A Modern Approach. Second Edition. Pearson Education [T2] Elaine R. Kevin K. (2009). Artificial Intelligence. Tata McGraw Hill.	
Reference Books: [R1] N. J. Nilsson, (1982) Principles of AI, Narosa Publ. House. [R2] Ross T. J. (1995), Fuzzy Logic with Engineering Application. McGraw Hill. [R3] S.N. Sivanandam, S.N. Deepa, (2018) Principles of Soft Computing, 3rd Edition, Wiley India.	