Course File Contents

Dept. of Computer Science &Engineering (AI & ML)

I.COVER PAGE

BALAJI INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)
Department of Artificial Intelligence & Machine Learning

Name of the Subject : INTRODUCTION TO ARTIFICIAL INTELLIGENCE

BITS CODE : 22CS426PC Programme : **UG**

Branch : AI & ML	Version No :
Year : **III**	Document Number : **BITS/AI&ML/**
Semester : **II**	Number of Pages :

Classification status (Unrestricted/Restricted) : Unrestricted

Distribution List: Dept. Library, Dept. Office, Concerned Faculty

Prepared by :	Updated by :
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Verified by :*For Q.C only

1. Name : **2.** Sign : **3.** Design : **4.** Date :	**1.** Name : : **2.** Sign **3.** Design : **4.** Date :

Approved by (HOD) :

1. Name :

2. Sign :

3. Date :

CSE (Artificial Intelligence & Machine Learning)

II. VISION AND MISSION OF THE DEPARTMENT

VISION

To be a global leader in Artificial Intelligence and Machine Learning research, innovation, and education, driving transformative advancements that empower industries, enhance human capabilities, and contribute to a smarter, more sustainable world.

MISSION

M1: Innovative Research & **Quality Education** – To Conduct research on cutting-edge Technologies to address complex real-world problems across diverse domains and provide world-class education and training to equip students with technical expertise, ethical responsibility, and problem-solving skills.

M2: Industry Collaboration & Ethical AI Development –To Foster strong partnerships with industries, academia, and government organizations to develop impactful AI solutions and promote responsible and ethical AI practices that align with societal values and global sustainability.

M3: Entrepreneurship & Innovation – Encourage entrepreneurship and the development of AI-driven start-ups and products that contribute to economic growth.

M4: Community Engagement – Engage with communities to spread AI awareness, inclusivity, and accessibility for societal benefit.

III. PEOs, POs and PSOs

Program Educational Objectives

PEO1: Graduates shall apply the analytical, decision making and prediction skills in AI & ML to formulate and solve complex intelligent computing and multidisciplinary problems.

PEO2: Graduates will be able to take up higher studies, research & development by acquiring in-depth knowledge in Artificial Intelligence & Machine Learning.

PEO3: Graduates will be able to exhibit their employability skills and practice the ethics of their profession with a sense of social responsibility.

Programs Outcomes

PO1: graduate of the Artificial Intelligence & Machine Learning Program will demonstrate:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO3: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO4: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO5: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO6: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO7: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO8: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Program Specific Outcomes (PSOs)

PSO1: Apply a set of Artificial Intelligence principles, tools, and techniques to model various real-world business problems, analyze them, and suggest a suitable solution by communicating relevant findings and effectively presenting results using appropriate techniques.

PSO2: Apply the skills of Artificial Intelligence and Machine Learning in the areas of Health Care, Education, Agriculture, e-commerce, financial sector, Smart Systems, and Multi-disciplinary areas of AI.

PSO3: Cultivate the ability to work in teams and learn by participating in Technical Events and Social Welfare Programs and develop the attitude for working productively as an individual and in cross- disciplinary teams to become better citizens in multicultural world.

IV-Syllabus copy and Academic calendar

BALAJI INSTITUTE OF TECHNOLOGY AND SCIENCE (AUTONOMOUS)

22CS426PC: INTRODUCTION TO ARTIFICIAL INTELLIGENCE

B.Tech. II Year II Sem.

L	T	P	C
3	0	0	3

Prerequisite: Knowledge on Data Structures.

Course Objectives:

- To learn the distinction between optimal reasoning Vs. human like reasoning.
- To understand the concepts of state space representation, exhaustive search, heuristic
- search together with the time and space complexities.
- To learn different knowledge representation techniques.
- To understand the applications of AI, namely game playing, theorem proving, and machine learning.

Course Outcomes:

- Learn the distinction between optimal reasoning Vs human like reasoning and formulate an efficient problem space for a problem expressed in natural language. Also select a search algorithm for a problem and estimate its time and space complexities.
- Apply AI techniques to solve problems of game playing, theorem proving, and machine learning.
- Learn different knowledge representation techniques.
- Understand the concepts of state space representation, exhaustive search, heuristic search together with the time and space complexities.
- Comprehend the applications of Probabilistic Reasoning and Bayesian Networks.
- Analyze Supervised Learning Vs. Learning Decision Trees

UNIT - I

Introduction to AI - Intelligent Agents, Problem-Solving Agents,

Searching for Solutions - Breadth-first search, Depth-first search, Hill-climbing search, Simulated annealing search, Local Search in Continuous Spaces.

UNIT-II

Games - Optimal Decisions in Games, Alpha–Beta Pruning, Defining Constraint Satisfaction Problems, Constraint Propagation, Backtracking Search for CSPs, Knowledge-Based Agents, **Logic-** Propositional Logic, Propositional Theorem Proving: Inference and proofs, Proof by resolution, Horn clauses and definite clauses.

UNIT-III

First-Order Logic - Syntax and Semantics of First-Order Logic, Using First Order Logic, Knowledge Engineering in First-Order Logic. Inference in First-Order Logic: Propositional vs. First-Order Inference, Unification, Forward Chaining, Backward Chaining, Resolution.

Knowledge Representation: Ontological Engineering, Categories and Objects, Events.

UNIT-IV

Planning - Definition of Classical Planning, Algorithms for Planning with State Space Search, Planning Graphs, other Classical Planning Approaches, Analysis of Planning approaches. Hierarchical Planning.

UNIT-V

Probabilistic Reasoning:

Acting under Uncertainty, Basic Probability Notation Bayes' Rule and Its Use, Probabilistic Reasoning, Representing Knowledge in an Uncertain Domain, The Semantics of Bayesian Networks, Efficient Representation of Conditional Distributions, Approximate Inference in Bayesian Networks, Relational and First- Order Probability.

TEXT BOOK:

1. Artificial Intelligence: A Modern Approach, Third Edition, Stuart Russell and Peter Norvig, Pearson Education.

REFERENCE BOOKS:

1. Artificial Intelligence, 3rd Edn., E. Rich and K. Knight (TMH)
2. Artificial Intelligence, 3rd Edn., Patrick Henny Winston, Pearson Education.
3. Artificial Intelligence, Shivani Goel, Pearson Education.
4. Artificial Intelligence and Expert systems – Patterson, Pearson Education.

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ACADEMIC CALENDAR FOR B.TECH. II-YEAR FOR THE ACADEMIC YEAR 2024-25

B.Tech II-Year –I Semester

S.No	Description	Date		Duration
		From	To	
1	1st Spell of instructions	08-07-2024	11-09-2024	10 Weeks
2	First Mid Term Examinations	12-09-2024	14-09-2024	3 days
3	2nd Spell of Instructions	16-09-2024	05-10-2024	3 Weeks
4	Dussehra Recess	07-10-2024	12-10-2024	1 week
5	2nd Spell of Instructions continuation	14-10-2024	16-11-2024	5 Weeks
6	Second Mid Term Examinations	18-11-2024	20-11-2024	3 days
7	Preparation Holidays & Practical Examinations	21-11-2024	30-11-2024	9 days
8	End semester Examinations	02-12-2024	14-12-2024	2 Weeks

B.Tech II-Year –II Semester

S.No	Description	Date		Duration
		From	To	
1	Commencement of II Semester class work	16-12-2024		
2	1st Spell of Instructions	16-12-2024	12-02-2025	9 Weeks
3	First Mid Term Examinations	13-02-2025	15-02-2025	3 days
4	2nd Spell of instructions	17-02-2025	12-04-2025	8 Weeks
5	Second Mid Term Examinations	15-04-2025	17-04-2025	3 days
6	Preparation Holidays and Practical Examination	18-04-2025	26-04-2025	8 days
7	End Semester Examinations	28-04-2025	10-05-2025	2 Weeks

06/7/24

PRINCIPAL

Principal
Balaji Institute of Tech & Science
LAKNEPALLY Narsampet-506 331

Copy to:

1. Dean-Academics
2. All Head of the Departments
3. Examination branch

V. BRIEF NOTES ON THE IMPORTANCE OF THE COURSE

1. Fundamentals of AI

- Definition and history of AI
- Strong AI vs. Weak AI
- AI vs. Machine Learning vs. Deep Learning
- Applications of AI in various industries

2. Problem Solving and Search Techniques

- State-space search
- Uninformed search algorithms (BFS, DFS)
- Informed search (A*, Greedy Best-First Search)
- Constraint satisfaction problems

3. Machine Learning Basics

- Supervised, Unsupervised, and Reinforcement Learning
- Common algorithms (Linear Regression, Decision Trees, Neural Networks)
- Bias and variance trade-off
- Feature engineering and selection

4. Neural Networks and Deep Learning

- Artificial Neural Networks (ANN)
- Convolutional Neural Networks (CNN)
- Recurrent Neural Networks (RNN) and Long Short-Term Memory (LSTM)
- Transformers (e.g., GPT, BERT)

5. Natural Language Processing (NLP)

- Tokenization, Lemmatization, and Stemming
- Sentiment Analysis
- Language Models and Chatbots
- Machine Translation

6. Computer Vision

- Image recognition and classification
- Object detection (YOLO, Faster R-CNN)
- Face recognition and Generative Adversarial Networks (GANs)

7. AI Ethics and Bias

- Ethical concerns in AI
- Bias in AI and how to mitigate it
- Explainable AI (XAI)
- AI regulations and policies

8. Robotics and AI

- AI-powered robotics
- Autonomous vehicles
- Reinforcement learning in robotics

9. Expert Systems and Knowledge Representation

- Rule-based systems
- Knowledge graphs
- Ontologies in AI

10. Future of AI and Emerging Trends

- AI and quantum computing
- AI for drug discovery
- AI-generated content and creativity
- AGI (Artificial General Intelligence)

VI. PREREQUISITES

1. Mathematics for AI

Mathematics is crucial for understanding AI algorithms and models. Some key areas include:

- **Linear Algebra** – Vectors, Matrices, Eigenvalues, Singular Value Decomposition (SVD) (Used in Neural Networks, PCA)
- **Probability and Statistics** – Bayes' Theorem, Probability Distributions, Hypothesis Testing (Used in Bayesian Networks, Naive Bayes)
- **Calculus** – Differentiation, Partial Derivatives, Gradient Descent (Used in Deep Learning Optimization)
- **Discrete Mathematics** – Graph Theory, Logic, Combinatorics (Used in AI search algorithms, game theory)

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2. Programming Skills

AI development requires proficiency in programming, mainly in:

- **Python** – The most widely used language for AI due to libraries like TensorFlow, PyTorch, and Scikit-Learn
- **R** – Useful for statistical analysis and data science
- **C++/Java** – Used in high-performance applications and robotics
- **SQL** – Used for working with databases

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3. Machine Learning Fundamentals

- Understanding **Supervised vs. Unsupervised Learning**
- Basic **ML algorithms** (Linear Regression, Decision Trees, K-Means)
- Overfitting and Regularization
- Feature Engineering and Model Evaluation

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4. Data Science and Preprocessing

- Data Collection and Cleaning
- Feature Scaling and Normalization
- Handling Missing Data

VII. COURSE OBJECTIVES & OUTCOMES

COURSE OBJECTIVES:

- To learn the distinction between optimal reasoning Vs. human like reasoning.
- To understand the concepts of state space representation, exhaustive search, heuristic search together with the time and space complexities.
- To learn different knowledge representation techniques.
- To understand the applications of AI, namely game playing, theorem proving, and machine learning.

COURSE OUTCOMES (COs):

- Learn the distinction between optimal reasoning Vs human like reasoning and formulate an efficient problem space for a problem expressed in natural language. Also select a search algorithm for a problem and estimate its time and space complexities.
- . Apply AI techniques to solve problems of game playing, theorem proving, and machine learning.
- Learn different knowledge representation techniques.
- Understand the concepts of state space representation, exhaustive search, heuristic search together with the time and space complexities.
- To carry out standard data visualization and formal inference procedures • Design Data
- Comprehend the applications of Probabilistic Reasoning and Bayesian Networks.
- Analyze Supervised Learning Vs. Learning Decision Trees.

  By the end of this course, Students should be able to:

CO Number	Statement
CO1	Understand and analyze various Data types, Concepts and their applications related to Big data
CO2	Apply statistical methods and exploratory data analysis (EDA) to summarize and visualize data effectively.
CO3	Implement machine learning algorithms for classification, clustering, and regression tasks.
CO4	Utilize big data frameworks and tools such as Hadoop and Spark for large-scale data processing.
CO5	Interpret results from data analytics models to make informed business decisions and real-world applications.

VIII. CO-PO, CO-PSO MAPPING & JUSTIFICATION

Name of the Subject:C214 (Introduction to Artificial Intelligence-22CS426PC)

Year of Study: 2021-2022

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C214.1	2	3	2	-	2	2	-	-	-	-	2	2
C214.2	-	2	3	-	2	1	-	-	-	-	-	-
C214.3	3	2	-	2	1	2	-	-	-	-	2	-
C214.4	2	-	1	2	-	2	-	-	-	-	-	2
C214.5	3	-	3	2	2	-	-	-	-	-	-	-
Average	2.50	2.33	2.25	2.00	1.75	1.75	-	-	-	-	2.00	2.00

Course Name: C214

(Introduction to Artificial Intelligence-22CS426PC)

Year of Study: 2023-2024

CO	PSO1	PSO2
C214.1		
C214.2	2	
C214.3		2
C214.4	1	
C214.5		1
Average	**1.50**	**1.50**

JUSTIFICATION FOR COURSE OUTCOMES MAPPING WITH POs AND PSOs

- **COURSE OUTCOME 1**
  - **PO1 (Engineering Knowledge):** Strong correlation as students apply fundamentals of physics, mathematics, and electrostatics.
  - **PO2 (Problem Analysis):** Strong correlation, as students analyze charge distributions and field behavior.
  - **PO3 (Design & Development of Solutions):** Strong correlation as students evaluating field distribution calculations.
  - **PO4 (Investigations of Complex Problems):** Moderate correlation as students investigating magnetostatics properties using analytical tools.
- **COURSE OUTCOME 2**
  - **PO1 (Engineering Knowledge):** Strong correlation as students apply fundamentals of physics, mathematics and magnetostatics
  - **PO2 (Problem Analysis):** Strong correlation as students analyze current distributions and field behavior in magnetostatics.
  - **PO3 (Design & Development of Solutions):** Moderate correlation for applying magnetostatics for magnetic field distribution calculations.
  - **PO4 (Investigations of Complex Problems):** Moderate correlation for investigating electromagnetic properties using analytical tools.
- **COURSE OUTCOME 3**
  - **PO1 (Engineering Knowledge):** Strong correlation as students apply fundamentals of physics, mathematics and electromagnetics
  - **PO2 (Problem Analysis):** Strong correlation as students analyze time varying charge distributions and time varying current distributions field behavior.
  - **PO3 (Design & Development of Solutions):** Strong correlation, as students calculate electric and magnetic field for time varying charge and time varying current distributions
  - **PO4 (Investigations of Complex Problems):** Strong correlation as students investigates boundary conditions in different media.
- **COURSE OUTCOME 4**
  - **PO1 (Engineering Knowledge):** Strong correlations as students apply fundamentals of wave propagation in different media and related concepts like reflection and refraction.
  - **PO2 (Problem Analysis):** Strong correlations as students Identifies and evaluates wave behavior in conducting and dielectric media.
  - **PO3 (Design & Development of Solutions):** Strong correlations as students Solve practical engineering problems involving electromagnetic wave propagation.
  - **PO4 (Investigations of Complex Problems):** Moderate correlations as students investigate wave propagation parameters for different media.
- **COURSE OUTCOME 5**

- **PO1 (Engineering Knowledge):** Strong correlations as students apply fundamentals like line equations, impedance matching, smith chart etc.
- **PO2 (Problem Analysis):** Strong correlation as students analyzes transmission line parameters, input impedance, VSWR, and reflection coefficient in transmission lines
- **PO3 (Design & Development of Solutions):** Strong correlation as student applies advanced mathematical models to evaluate transmission line performance and designs circuits involving transmission lines using the Smith chart
- **PO4 (Investigations of Complex Problems):** Strong correlation as student investigates transmission line properties using theoretical approaches

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IX. CLASS TIME TABLE & INDIVIDUAL TIME TABLE

Dept. of Computer Science &Engineering (AI & ML)

CLASS TIME TABLE

A.Y. 2024-25 (II Sem) Reg (R22)

Class: B.Tech II CSM A — **w.e.f.16 .12.2024**

DAY	1	2	3	4	1:00-1:40	5	6	7
	9:30 - 10:20	10:20 - 11:10	11:20 - 12:10	12:10 - 01:00	LUNCH BREAK	1:40 - 02:30	2:30 - 03:20	3:20 - 04:10
MON	DBMS	DM	IAI	ATCD		OOPS LAB		
TUE	DM	PROLOG LAB				OOPS	DBMS	COUNSELLING
WED	CRT/SDP-THEORY		IAI	OOPS		CRT / SDP - TECHNICAL LAB		
THU	ATCD	DM	OOPS	IAI		DBMS	CRT- Verbal Ability	
FRI	OOPS	DBMS	Real TimeReserarchProject			OOPS	IAI	ATCD
SAT	ATCD	DBMS LAB				ATCD	DM	LIBRARY/SPORTS

SUBJECTS:

Discrete Mathematics (DM) : Dr.A.Srinivaas
Automata Theory and Compiler Design (ATCD): Mrs.Vedavani.M
Database Management Systems : (DBMS) : Mr.Naresh Goke
Introduction to Artificial Intelligence (IAI) :Dr.G.Praveen
OOPs:Object Oriented Programming Through Java(OOPS) :Mr.A.Chiranjeevi
Gender Sensitization (G.S) : Dr.A.Karunasri

LABS:

Prolog Lab :Ms.Sameera Tamkeen/Ms.G.Amani
DBMS lab :Mr.Naresh Goke/Laxmansingh Baisa

Object Oriented Programming Through Java Lab :

Mr.A.Chiranjeevi/Ms.Divya Aitha
Real Time Research project Lab : Bajaru likitha

CRT / SDP :

Technical _ Theory &Lab : Mr.D.Venu
Venue : T&P Lab
Verbal Ability :Mr.N.Maha Teja
Venue: Main Seminar Hall

Mr.Dr.Praveen Gugulothu								TOTAL(14)
DAY	1	2	3	4		5	6	7
	9:30 - 10:20	10:20 - 11:10	11:20 - 12:10	12:10 - 01:00	LUNCHBREAK	1:40 - 02:30	2:30 - 03:20	3:20 - 04:10
MON			IAI					
TUE		PROLOG LAB						
WED			IAI					
THU				IAI				
FRI							IAI	
SAT		DBMS LAB						

X. METHOD OF TEACHING

Teaching methods for a course on Data analytics' should be diverse and interactive to cater to the complexity and depth of the subject matter. Here are some effective methods:

1. LECTURES

TRADITIONAL LECTURES: Using clear explanations, real-world examples, and visual aids like slides and diagrams for explaining key concepts such as Maxwell's equations, wave propagation, and transmission line theory.

GUEST LECTURES: Invited industry experts/researchers for providing insights into current trends and applications of electromagnetic fields and transmission lines.

2. INTERACTIVE LEARNING

PROBLEM-SOLVING SESSIONS: Conducting sessions where students solve problems in real-time, encouraging participation and collaborative learning.

Q&A SESSIONS: Regularly holding sessions where students can ask questions and engage in discussions to clarify doubts and deepen their understanding.

3. LABORATORY EXERCISES

Hands-On EXPERIMENTS: Setting up laboratory experiments where students can observe and measure electromagnetic phenomena, such as wave propagation and impedance matching.

4. PROJECTS AND CASE STUDIES

DESIGN PROJECTS: Assign projects where students design components such as antennas, transmission lines, or RF circuits, applying theoretical knowledge to practical problems.

CASE STUDIES: Analyzing real-world case studies of electromagnetic field applications in various industries, encouraging students to think critically about practical challenges and solutions.

5. FLIPPED CLASSROOM

PRE-CLASS ASSIGNMENTS: Providing reading materials, videos, and online resources for students to study before class. This prepares them for more in-depth discussions and activities during class time.

INTERACTIVE CLASS ACTIVITIES: Using class time for interactive activities such as group discussions, problem-solving, and hands-on experiments, reinforcing the pre-class material.

6. ASSESSMENT AND FEEDBACK

QUIZZES AND TESTS: Regular quizzes and tests to assess understanding and providing feedback on areas needing improvement.

PEER REVIEW: Incorporating peer review sessions for project presentations and reports, fostering collaborative learning and constructive criticism.

7. VISUAL AND MULTIMEDIA AIDS

VIDEOS AND ANIMATIONS: Using videos and animations to illustrate complex electromagnetic phenomena, making abstract concepts more tangible.

8. COLLABORATIVE LEARNING

GROUP PROJECTS: Encouraging teamwork through group projects where students can collaborate on designing and testing electromagnetic systems.

STUDY GROUPS: Forming study groups to promote peer-to-peer learning and discussion outside of formal class hours.

9. SUPPLEMENTARY RESOURCES

ONLINE FORUMS: Creating online forums or discussion boards for students to ask questions, share resources, and discuss course material.

READING MATERIALS: Provide a list of recommended textbooks, research papers, and articles for further reading and exploration of advanced topics.

XI: Lecture Schedule

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Department of Computer Science & Engineering

LESSON PLAN & DELIVERY REPORT

Subject: Introduction to Artificial Intelligence

Class: B.Tech. II CSM Year II Sem

Faculty: **Regulation**: R22

Academic Year: 2024-25 (II-Sem) **Commencement of Class Work**: 12-02-2024

Topics (as per syllabus)	Sub Topics	Lect. No	Topic Scheduled Date	Topic Delivered Date
-----	Introduction	L1	19.12.24	
Unit- I **Introduction**	Introduction to Artificial Intelligence	L2	20.12.24	
	Explanation of Key terms like Artificial Intelligence, Machine Learning and Deep Learning and Data Science	L3	24.12.24	
	Explanation Goals and Applications and Types of AI	L4	27.12.24	
	Explanation of Types of Searching like Informed Search and Uninformed Search	L5	28.12.24	
	Breadth First Search	L6	31.12.24	
Searching concepts	Depth First Search	L7	2.1.24	
	Hill Climbing Search	L8	28.12.24	

	Simulated Annealing Search	L9	31.12.24	
Topics (as per syllabus)	**Sub Topics**	**Lect. No.**	1.1.2025	
	Local Search in Continuous Space search	**L10**	2.1.2025	
	Agent concept in AI	L11	3.1.2025	
	Different types of Agents in AI like Problem Solving Agents and Intelligent Agents	L12	4.1.2025	
	Slip Test in Unit - I	L13	7.1.2025	
Topics (as per syllabus)	**Sub Topics**	**Lect. No.**	8.1.2025	
Unit II	Introduction to Games Optimal Decisions	L14	10.1.2025	
	Alpha-Beta Pruning	L15	11.1.2025	
	Constraint Satisfaction Problem	L16	16.1.2025	
	Constraint Propagation	L17	16.1.2025	
	Backtracking search for CSPs	L18	16.1.2025	
	Knowledge based agents	L19	**Scheduled Date**	**Topic Delivered Date**
	Propositional Logic	L20	17.1.2025	
	Propositional theorem proving	L21	17.1.2025	

	Inference and Profs	L22	21.1.2025	
	Prof by resolution	L23	22.1.2025	
	Horn Clauses and Definite clauses	L24	23.1.2025	
Unit III	Slip Test in Unit II	L25	24.1.2025	
	First Order Logic	L26	24.1.2025	
	Syntax and Symantec of First Order Logic	L26	28.1.2025	
	Knowledge Engineering in First Order Logic	L27	29.1.2025	
	Inference in First Order Logic	L28	30.1.2025	
	Revision Of Unit I and Unit II for mid exams	L29	31.1.2025	
	Mid-I Examination		31.1.2025	
	Proposition Vs First – Order Inference	L30	4.02.2025	
	Unification	L31	5.02.2025	
	Forward Chaining	L32	5.02.2025	
	Backward Chaining	**L33**	5.02.2025	
	Resolution	L34	• Marks Distribution • Counsel the students (Absent/got poor marks)	
	Ontological Engineering	L35	**Scheduled Date**	**Topic Delivered Date**
	Categories and Objects ,Events	L36	6.02.2025	

	Classical planning	L37	7.02.2025	
	Algorithms for Planning with state Space search	L38	7.02.2025	
	Planning Graphs	L39	11.02.2025	
		L40	12.02.2025	
	Classical Planning Approaches	L41	13.02.2025	
	Analysis of Planning Approaches	L42	14.02.2025	
	Analysis of Planning Approaches	L43	14.02.2025	
Unit-IV -	Hierarchical Planning	L44	18.02.2025	
	Hierarchical Planning	L45	19.02.2025	
	Slip Test in Unit IV	L46	20.02.2025	
	Acting Under Uncertainty	L50	21.02.2025	
	Byes Rules	L51	21.02.2025	
	Probabilistic Reasoning	L52	21.02.2025	
	Representing Knowledge in Uncertain domain	L53	21.02.2025	
	The semantics of Bayes Network	L54	21.02.2025	

	Representation of Conditional Distributions	L55	25.02.2025	
	First Order Probability	L56	27.02.2025	
	Slip Test in Unit V	L57	28.02.2025	
	UNIT-I, UNIT-II	L58	28.02.2025	
	UNIT-III, UNIT-IV and UNIT-V	L59	4.03.2025	
	Important Questions	L60	5.03.2025	
	Mid II Schedule:		6.03.2025	

Subject Teacher **HOD**

XIII. ADDITIONAL TOPICS

1. Advanced Machine Learning Techniques

- Ensemble Learning (Bagging, Boosting, Stacking)
- Transfer Learning
- Self-Supervised and Semi-Supervised Learning
- Explainable AI (XAI)

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2. Deep Learning Specializations

- Advanced Architectures (Capsule Networks, Transformer Models)
- Generative Models (GANs, Variational Autoencoders)
- Self-Attention Mechanisms
- Meta-Learning and Few-Shot Learning

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3. Reinforcement Learning (RL)

- Markov Decision Processes (MDP)
- Deep Q-Networks (DQN)
- Policy Gradient Methods (REINFORCE, PPO)
- Multi-Agent Reinforcement Learning (MARL)

4.AI in Computer Vision

- Object Detection (YOLO, Faster R-CNN)
- Image Segmentation (U-Net, Mask R-CNN)
- Video Analysis and Action Recognition
- 3D Vision and Augmented Reality (AR)

XIV.Mid exam question Papers- Theory and quiz

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Balaji Institute of Technology & Science
Laknepally (V), Narsampet (M), Warangal District - 506 331, Telangana State, India
(AUTONOMOUS)
Accredited by NBA (UG - CE, EEE, ME, ECE & CSE) & NAAC A+ Grade
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Department of AIML

MID-I

Subject: INTRODUCTION TO ARTIFICIAL INTELLIGENCE *(22CS426PC)*

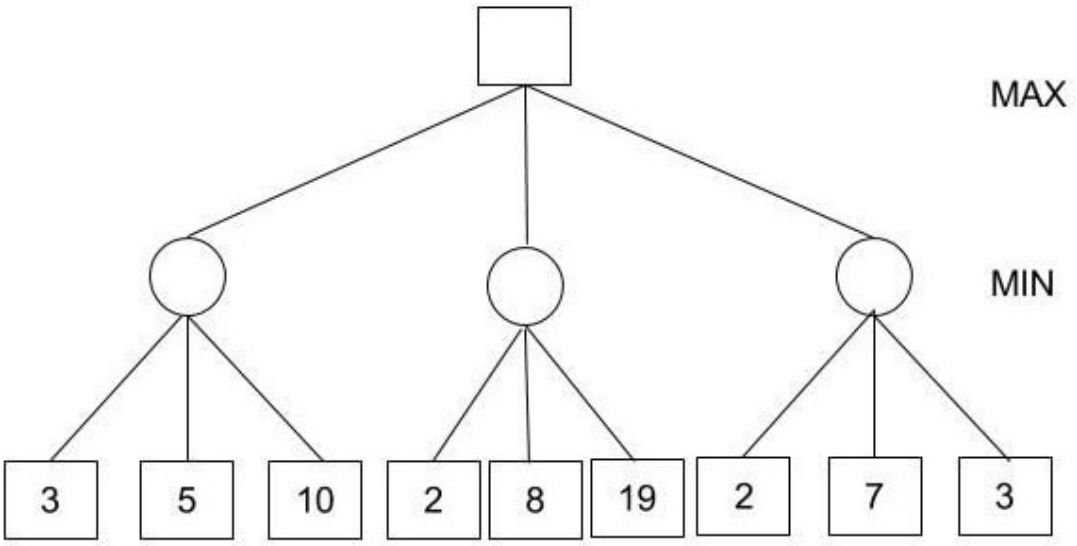
Class: AIML, II-II SEM

Regulation: R22 **A.Y.: 2024-2025**

Answer any four questions. 4X5=20M

1. Explain the following uninformed search strategies with examples.
   a) Breadth First Search. b) Depth First Search

2. Explain Alpha–Beta Pruning where Alpha = - ∞, Beta= ∞



3.Using Constraint Satisfaction Problems solve the Following Crypt-Arthematic

$$\begin{array}{r} T\ W\ O \\ +\ T\ W\ O \\ \hline F\ O\ U\ R \end{array}$$

2. $$\begin{array}{r} S\ E\ N\ D \\ +\ M\ O\ R\ E \\ \hline M\ O\ N\ E\ Y \end{array}$$

4.Explain difference between First-Order Logic and Propositional Logic?

5.ExplainForward Chaining and Backward Chaining ?

6.Given sentences convert in to FOL
A)Sam is Tall B) Everyone likes beautiful Roses C) Some Boys are Intelligent

MCQ

1. The main task of a problem-solving agent is [ ]

A) Solve the given problem and reach to goal

B) To find out which sequence of action will get it to the goal state

C) Both a) and b) D) Neither a) nor b)

2. What is state space? [ ]

A) The whole problem B) Your Definition to a problem

C) Problem you design D) Representing your problem with variable and parameter

3.Which is created by using single propositional symbol? [ ]

A) Complex sentences B) Atomic sentences C) Composition sentences D) None of the mentioned

4. Which is used to construct the complex sentences? [ ]

A) Symbols B) Connectives C) Logical connectives D) All of the mentioned

5. How many proposition symbols are there in artificial intelligence? [ ]

A) 1 B) 2 C) 3 D) 4

6. How many logical connectives are there in artificial intelligence? [ ]

A) 2 B) 3 C) 4 D) 5

7. In _____ phase, involves expressing the key concepts and relations in some framework supported by ES Building tool [ ]

A) Formalization Phase B) Conceptual phase C) Implementation Phase D) Testing phase

8. In _____ phase, formalized knowledge is converted to a working computer program [ ]

A) Formalization Phase B) Conceptual phase C) Implementation Phase D) Testing phase

9. In _____ phase involves evaluating the performance and utility of prototype system and revising the system. [ ]

A) Formalization Phase B) Conceptual phase C) Implementation Phase D) Testing phase

10. In ES Architecture _____ engine used to reason with the expert knowledge as well as the data specific to problem being solved. [ ]

A) Control Engine B) Inference Engine C) UI engine D) None

Fill in the blanks

1. The exploration problem is where_____.
2. Which of the given language is not commonly used for AI……..
3. A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the___
4. Ramu is Good Boy Convert int FOL……..
5. The initial state and the legal moves for each side define the _____ for the game.
6. General algorithm applied on game tree for making decision of win/lose is _____
7. What is the complexity of minimax algorithm……
8. An AI agent perceives and acts upon the environment using___.
9. Which agent deals with the happy and unhappy state……..
10. Rational agent always does the right things. T/F…….

XV University Question papers of previous years

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, January/February - 2023 ARTIFICIAL INTELLIGENCE

(Computer Science and Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	What is well defined problem?	[2]
b)	Define search tree and write its properties.	[3]
c)	What is game tree?	[2]
d)	Explain evaluation function.	[3]
e)	Define atomic and complex sentence in first order logic.	[2]
f)	What is First order logic?	[3]
g)	Define temporal constraints.	[2]
h)	Explain classical planning.	[3]
i)	Define over fitting.	[2]
j)	State Baye's rule.	[3]

PART – B

(50 Marks)

2.a)	What is simple problem solving agent? Explain it briefly.	
b)	Discuss Greedy best first search algorithm.	[5+5]
3.a)	What is bidirectional search ? Explain in detail.	
b)	Explain Breadth First Search algorithm with an example.	[5+5]
4.a)	Elaborate on knowledge based agents.	
b)	Explain CSP problem for job scheduling.	[5+5]

5.a) What is Resolution? Explain Resolution algorithm for Proposition logic.
b) Explain backtracking searching technique. [5+5]

6.a) Explain quantifier estimates and its types.
b) Analyze the steps in knowledge-engineering process. [5+5]

OR

7.a) Explain reasoning with default information.
b) Write simple forward chaining algorithm. [5+5]

8.a) Discuss regressive relevant state space search.
b) What is Graph Plan? Explain in detail. [5+5]

9.a) Describe multi agent planning.
b) Give the solution for scheduling planning.[5+5]

10.a) Explain inductive logic programming.
b) Describe Bayesian networks in detail.[5+5]

11.a) What is Decision tree? Explain steps to construct to Decision tree.
b) Explain the issues in decision tree learning.[5+5

XVI Unit-wise quiz questions

UNIT - I

1. The main task of a problem-solving agent is [ ]
A) Solve the given problem and reach to goal
B) To find out which sequence of action will get it to the goal state
C) Both a) and b) D) Neither a) nor b)
2. What is state space? [ ]
A) The whole problem B) Your Definition to a problem
C) Problem you design D) Representing your problem with variable and parameter
3. A search algorithm takes ___ as an input and returns ____ as an output. [ ]
A) Input, output B) Problem, solution C) Solution, problem D) Parameters, sequence of actions
4. A problem in a search space is defined by [ ]
A) Initial state B) Goal test C) Intermediate states D) All of the above
5. The Set of actions for a problem in a state space is formulated by a ____. [ ]
A) Intermediate states B) Initial state
C) Successor function, which takes current action and returns next immediate state
D) None of the mentioned
6. The process of removing detail from a given state representation is called __ [ ]
A) Extraction B) Abstraction C) Information Retrieval D) Mining of data
7. A problem solving approach works well for ` [ ]
A) 8-Puzzle problem B) 8-queen problem
C) Finding a optimal path from a given source to a destination D) Mars Hover (Robot Navigation)
8. The _____ is a touring problem in which each city must be visited exactly once. The aim is to find
the shortest tour.
A) Finding shortest path between a source and a destination
B) Travelling Salesman problem
C) Map coloring problem
D) Depth first search traversal on a given map represented as a graph
9. What is the action of task environment in artificial intelligence? [ ]

A) Problem B) Solution C) Agent D) Observation

10. What is the expansion if PEAS in task environment? [ ]

A) Peer, Environment, Actuators, Sense B) Perceiving, Environments, Actuators, Sensors

C) Performance, Environment, Actuators, Sensors D) None

Fill in the Blanks

1. Expand DFS…….
2. What is the Notations FOR ALL……
3. Expand CSP……..
4. The application/applications of Artificial Intelligence is/are……..
5. The component of an Expert system is_____.
6. Which algorithm is used in the Game tree to make decisions of Win/Lose…….
7. The available ways to solve a problem of state-space-search……
8. An AI agent perceives and acts upon the environment using___.
9. Which agent deals with the happy and unhappy state……..
10. Rational agent always does the right things. T/F…….

UNIT – II

1. Which is created by using single propositional symbol? [ ]

A) Complex sentences B) Atomic sentences C) Composition sentences D) None of the mentioned

2. Which is used to construct the complex sentences? [ ]

A) Symbols B) Connectives C) Logical connectives D) All of the mentioned

3. How many proposition symbols are there in artificial intelligence? [ ]

A) 1 B) 2 C) 3 D) 4

4. How many logical connectives are there in artificial intelligence? [ ]

A) 2 B) 3 C) 4 D) 5

5. Which is used to compute the truth of any sentence? [ ]

A) Semantics of propositional logic B) Alpha-beta pruning C) First-order logic D) Both a & b

6. Which are needed to compute the logical inference algorithm? [ ]

A) Logical equivalence B) Validity C) Satisfiability D) All of the mentioned

7. From which rule does the modus ponens are derived? [ ]

A) Inference rule B) Module rule C) Both a & b D) None

8. Which is also called single inference rule? [ ]

A) Reference B) Resolution C) Reform D) None

9. Which form is called as conjunction of disjunction of literals? [ ]

A) Conjunctive normal form B) Disjunctive normal form C) Normal form D) All of the mentioned

10.A* algorithm is based on [ ]
A) Breadth-First-Search B) Depth-First –Search C) Best-First-Search D) Hill climbing

Fill in the Blanks

1. General games involves _____
2. Adversarial search problems uses _____
3. Mathematical game theory, a branch of economics, views any multi-agent environment as a game provided that the impact of each agent on the others is "significant," regardless of whether the agents are cooperative or competitive.
   a) True
   b) False
4. Zero sum game has to be a _____ game.
5. The initial state and the legal moves for each side define the _____ for the game.
6. General algorithm applied on game tree for making decision of win/lose is _____
7. What is the complexity of minimax algorithm……
8. Artificial Intelligence is about_____
9. Who is known as the -Father of AI"……
10. If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the__

UNIT – III

1. Expert system also called as _____ [ ]

A) Expertized System B) Knowledge System

C) Knowledge based Expert System D) None

2. _____ system is developed using the expertise of best diagnosticians of bacterial infections whose

performance was found to be better than the average clinician. [ ]

A) MYCIN B) MICIN C) BASIN D) MARIN

3. A _____ handles the responsibility of extracting this knowledge and building Expert System knowledge base. [ ]

A) Expert Engineer B) Knowledge Engineer C) ES Engineer D) None

4. The process of gathering knowledge from a domain expert and codifying it according to the formalism is called [ ]

A) Expert Engineering B) Knowledge Engineering C) Power engineering D) None

5. In ____ Phase, the knowledge engineer determines important features and the problem with the help of human domain expert [ ]

A) Identification Phase B) Conceptualization Phase C) Testing phase D) None

6. In _____ phase, knowledge engineer and domain expert decide the concept, relations, and control

system needed [ ]

A) Identification Phase B) Formalization phase C) Conceptual Phase D) None

7. In _____ phase, involves expressing the key concepts and relations in some framework supported by ES Building tool [ ]

A) Formalization Phase B) Conceptual phase C) Implementation Phase D) Testing phase

8. In _____ phase, formalized knowledge is converted to a working computer program [ ]

A) Formalization Phase B) Conceptual phase C) Implementation Phase D) Testing phase

9. In _____ phase involves evaluating the performance and utility of prototype system and revising the system. [ ]

A) Formalization Phase B) Conceptual phase C) Implementation Phase D) Testing phase

10. In ES Architecture _____ engine used to reason with the expert knowledge as well as the data specific to problem being solved. [ ]

A) Control Engine B) Inference Engine C) UI engine D) None

Fill in the blanks

11. The exploration problem is where_____.
12. Which of the given language is not commonly used for AI……..
13. A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the___
14. Ramu is Good Boy Convert int FOL
15. Expand FOL……..
16. Expand CNF……..
17. What Notation Symbol used for AND……..
18. What Notation Symbol used for OR……..
19. What Notation Symbol used for ALL……
20. What Notation Symbol used for Bi-conditional……

UNIT-4

1 What is the fundamental unit of a Neural Network?
a) Pixel
b) Neuron
c) Layer
d) Kernel

2 Which activation function is commonly used in deep neural networks?
a) Sigmoid
b) ReLU
c) Softmax
d) All of the above

3 What is backpropagation used for in neural networks?
a) To initialize neural network weights
b) To compute loss in classification problems
c) To update weights in a neural network using gradient descent
d) To classify images

4 Which type of neural network is best suited for **image processing**?
a) Recurrent Neural Network (RNN)
b) Convolutional Neural Network (CNN)
c) Long Short-Term Memory (LSTM)
d) Autoencoder

5. What is the main advantage of using ReLU (Rectified Linear Unit) as an activation function?
a) It helps in vanishing gradient problems
b) It is computationally efficient
c) It outputs values between 0 and 1
d) It requires more parameters

6.What is the role of an **optimizer** in deep learning?
a) To reduce overfitting
b) To adjust the learning rate dynamically
c) To update weights based on the loss function
d) To increase dataset size

7.Which of the following techniques is used to prevent **overfitting** in deep learning?
a) Dropout
b) Batch Normalization
c) Data Augmentation
d) All of the above

8. A **fully connected layer** in a neural network means:
a) Each neuron is connected to every neuron in the previous and next layers
b) Each neuron is connected to a limited number of neurons
c) Neurons are only connected to output layers
d) None of the above

9.Which of the following neural networks is best suited for **sequential data processing**?
a) Convolutional Neural Networks (CNN)
b) Recurrent Neural Networks (RNN)
c) Feedforward Neural Networks
d) Random Forest

10 What does the **loss function** in a neural network do?
a) Computes the difference between actual and predicted values
b) Increases accuracy of the model
c) Reduces computation cost
d) Creates new features in a dataset

Unit 4:– Fill in the Blanks

1. The basic computational unit of a neural network is called a _____.
2. _____ is a common activation function in deep neural networks that helps mitigate the vanishing gradient problem.
3. In a Convolutional Neural Network (CNN), the _____ layer is responsible for detecting spatial hierarchies in an image.
4. The process of adjusting weights in a neural network based on the error is called _____.

5. The _____ algorithm is used to optimize weights in neural networks by minimizing the loss function.
6. _____ networks are best suited for processing sequential data such as time series and speech recognition.
7. In a fully connected layer, every neuron is connected to _____ neurons in the previous layer.
8. The _____ function converts a set of values into a probability distribution in classification tasks.
9. _____ is a regularization technique used to prevent overfitting by randomly disabling neurons during training.
10. The _____ problem occurs when gradients become extremely small, making training deep networks difficult.

UNIT 5: – MCQs

1. What is the primary goal of Natural Language Processing (NLP)?
   a) To generate random numbers
   b) To enable computers to understand, interpret, and generate human language
   c) To create new programming languages
   d) To translate binary code into text
2. Which of the following is NOT a core task in NLP?
   a) Tokenization
   b) Named Entity Recognition (NER)
   c) Image Segmentation
   d) Part-of-Speech (POS) Tagging
3. What does **BERT** stand for in NLP?
   a) Bidirectional Encoding for Representing Text
   b) Best Encoding Representation Tool
   c) Bidirectional Encoder Representations from Transformers
   d) Big Entity Recognition Technique
4. Which of the following techniques is used to break text into smaller units such as words or sentences?
   a) Stemming

b) Lemmatization
c) Tokenization
d) Named Entity Recognition

5. What is the difference between **stemming** and **lemmatization**?
   a) Stemming produces more accurate words than lemmatization
   b) Lemmatization reduces words to their base form using a dictionary, while stemming simply removes word endings
   c) Stemming is always used in modern NLP models, but lemmatization is not
   d) There is no difference between them

6. What is the purpose of **stop-word removal** in NLP?
   a) To remove important words from a sentence
   b) To remove commonly used words that do not contribute to meaning, such as "the" and "is"
   c) To improve model accuracy by keeping only short words
   d) To increase the number of tokens in a sentence

7. Which of the following is a popular deep learning model for **machine translation**?
   a) K-Means
   b) Naïve Bayes
   c) Transformer
   d) Decision Tree

8. Sentiment Analysis is used to:
   a) Detect human emotions in images
   b) Classify text as positive, negative, or neutral based on opinion
   c) Translate one language into another
   d) Summarize large documents automatically

9. **Word Embeddings** such as Word2Vec and GloVe help NLP models by:
   a) Assigning unique numeric values to each word in a dictionary
   b) Converting words into high-dimensional vectors that capture semantic meaning
   c) Removing unnecessary words from a sentence
   d) Translating text from one language to another

10. What is **TF-IDF (Term Frequency-Inverse Document Frequency)** used for?
    a) Measuring the importance of words in a document
    b) Detecting named entities in a text
    c) Translating words into another language
    d) Reducing text data size

Unit 5:– Fill in the Blanks

1. _____ is the field of AI that focuses on enabling computers to understand and process human language.
2. The process of breaking text into smaller units like words or sentences is called _____.
3. _____ is a technique used in NLP to remove common words like "the," "is," and "and" that do not add much meaning.
4. In NLP, _____ refers to identifying and classifying proper nouns such as names, locations, and dates.
5. The _____ model architecture, introduced in the paper "Attention is All You Need," revolutionized NLP tasks.
6. _____ and **GloVe** are popular word embedding techniques that represent words as numerical vectors.
7. _____ analysis is used to determine whether a given text expresses a positive, negative, or neutral sentiment.
8. The _____ algorithm is commonly used for machine translation tasks.
9. _____ is a method that assigns importance to words based on how frequently they appear in a document while adjusting for their frequency in a collection of documents.
10. The _____ problem in NLP occurs when a model fails to understand words that were not present in the training dataset.

XVII TUTORIAL PROBLEMS WITH BLOOMS MAPPING

Unit	Bloom's Level	Tutorial Problem
Unit 1: Introduction to AI	Remember	Define Artificial Intelligence and list two real-world applications.
Unit 1: Introduction to AI to AI	Understand	Explain the difference between Strong AI and Weak AI.
	Apply	Identify an AI system you use daily and explain how it functions.
	Analyze	Compare traditional programming with AI-based programming.
	Evaluate	Discuss whether AI can completely replace human intelligence.
	Create	Design a basic AI-based chatbot that can answer user queries about weather.
	Remember	Define informed and uninformed search strategies.
	Understand	Explain the working of A* algorithm with an example.
	Apply	Implement a Breadth-First Search (BFS) algorithm for a simple maze.

Unit 2: Problem Solving and Search Techniques	Analyze	Compare Depth-First Search (DFS) and Breadth-First Search (BFS) based on time complexity.
	Evaluate	Critically evaluate the efficiency of heuristic-based search methods in AI.
	Create	Develop a basic heuristic function for a pathfinding AI in a 2D grid.
Unit 3 First Order Logic	Remember	Define Supervised, Unsupervised, and Reinforcement Learning.
	Understand	Explain the concept of Overfitting and how it can be prevented.
	Apply	Train a basic linear regression model using a small dataset.
	Analyze	Compare Decision Trees and Neural Networks for classification tasks.
	Evaluate	Discuss the impact of biased data on AI models.
	Create	Design a simple recommendation system using a basic ML algorithm.
	Remember	Define an Artificial Neural Network (ANN) and list its components.
	Understand	Explain the role of activation functions in deep learning.

Unit 4:Planning - Definition of Classical Planning	Apply	Implement a simple feedforward neural network for digit classification.
	Analyze	Compare CNN and RNN architectures in terms of applications.
	Evaluate	Evaluate the effectiveness of backpropagation in training deep networks.
	Create	Build a CNN model for image recognition using Python and TensorFlow.
Unit 5: Probabilistic Reasoning	Remember	Define Natural Language Processing and list its key tasks.
	Understand	Explain how tokenization and lemmatization work in NLP.
	Apply	Implement a basic sentiment analysis model using a pre-trained NLP library.
	Analyze	Compare the strengths and weaknesses of rule-based and ML-based NLP approaches.
	Evaluate	Discuss the ethical concerns of AI-generated text (e.g., fake news, biased models).

XVIII Assignment Questions with Blooms

Unit 1: Introduction to AI

Bloom's Level	Assignment Question
Remember	Define Artificial Intelligence and explain its goals.
Understand	Describe the different types of AI (Reactive, Limited Memory, Theory of Mind, Self-Aware AI).
Apply	Identify an AI application in your daily life and explain how it improves efficiency.
Analyze	Compare the advantages and disadvantages of AI in the healthcare sector.
Evaluate	Debate whether AI is a threat to human jobs or an opportunity for growth.
Create	Develop a proposal for an AI-based project that can assist in education.

Unit 2: Problem Solving and Search Techniques

Bloom's Level	Assignment Question
Remember	Define Search Strategies in AI and give examples.
Understand	Explain the working of the A* search algorithm with a diagram.
Apply	Implement a simple Depth-First Search (DFS) algorithm for solving a puzzle.
Analyze	Compare and contrast Greedy Search and A* Search.

Evaluate	Critically analyze the effectiveness of heuristic search methods in AI problem-solving.
Create	Design a game-based problem and propose an AI solution using search techniques.

Unit 3: FOL

Bloom's Level	Assignment Question
Remember	Define Semantics of First-Order Logic, with examples.
Understand	Explain the Alpha–Beta Pruning .
Apply	Propositional vs. First-Order Inference
Analyze	Compare Forward Chaining, Backward Chaining, Resolution. tasks.
Evaluate	Discuss Ontological Engineering models.
Create	Develop a prototype for an AI-based recommendation system.

Unit 4:

Bloom's Level	Assignment Question
Remember	Define Artificial Neural Networks (ANN) and their key components.
Understand	Explain how Backpropagation works in training neural networks.
Apply	Implement a simple Feedforward Neural Network for digit classification.
Analyze	Compare Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN) in terms of applications.
Evaluate	Discuss the role of activation functions in deep learning models.

Create	Build a basic CNN model for image recognition using Python and TensorFlow.

Unit 5: Probabilistic Reasoning:

Bloom's Level	Assignment Question
Remember	Define Basic Probability Notation Bayes‟ Rule and Its Use key tasks.
Understand	Explain Representing Knowledge in an Uncertain Domain,
Apply	Develop a basic sentiment analysis model using a pre-trained NLP library.
Analyze	Compare rule-based e Semantics of Bayesian Networks.
Evaluate	Solve Conditional Distributions,
Create	Design First- Order Probability..

XIX -List of students

S.No	II-CSM -A	
	Roll No.	Names
1	23C31A6601	ADAPA RAKESH
2	23C31A6602	AITHA PRAVEEN
3	23C31A6603	AKARAPU ARPAN
4	23C31A6604	AMREEN
5	23C31A6605	ARURI PAVAN
6	23C31A6606	ARUTLA AJAY
7	23C31A6607	ATLA SAIKRISHNA
8	23C31A6608	BAIRABOINA PREETHI
9	23C31A6609	BAJJURI SANTHOSH
10	23C31A6610	BALABAKTHULA MANISHA
11	23C31A6611	BATTHULA DEEPIKA
12	23C31A6612	BEERUM LAXMI SRINIVAS
13	23C31A6613	BOINI AJAY
14	23C31A6614	BOLLENA VARSHA
15	23C31A6615	BOMMANAPELLY POOJITHA
16	23C31A6616	BURA SANJAY
17	23C31A6617	CHINNALA ARJUN
18	23C31A6618	CHINNAPALLY ASHWITHA
19	23C31A6619	CHINTHIREDDY PRAVEEN
20	23C31A6620	DARAVATH JASHWANTH
21	23C31A6621	DASARI LAHARI SRI
22	23C31A6622	DASARI SRINIVAS

23	23C31A6623	DASU SAIPRIYA
24	23C31A6624	DOLI ARCHANA
25	23C31A6625	DUDDE NITHISH
26	23C31A6626	DUPPATI PRANEETH
27	23C31A6627	EGA SHIVANI
28	23C31A6628	ELDI KARTHIK
29	23C31A6629	ENUGALA BHAVANI
30	23C31A6630	GAJJALA VARUN
31	23C31A6631	GANDHAM KARTHIK
32	23C31A6632	GANGINENI NAVEEN KUMAR
33	23C31A6633	GANJI KAVYA SHRI
34	23C31A6634	GOLI LAXMI PRASANNA
35	23C31A6635	GUJJULA RAMYA
36	23C31A6636	GUNDAMALA ARUN
37	23C31A6637	GUNISHETTI GANGOTHRI
38	23C31A6638	INDLA SANDHYA
39	23C31A6639	INTSHAR ALAM
40	23C31A6640	IPPA RITHWIK
41	23C31A6641	JANGETI KAVYA
42	23C31A6642	KANDUKURI JAYALAXMI
43	23C31A6643	KANKALA SUSHMITHA
44	23C31A6644	KANNAM SHIVA SAI
45	23C31A6645	KARRA SAHITHI REDDY
46	23C31A6646	KASANABOINA BHASKAR
47	23C31A6647	KATLA ARUN KUMAR
48	23C31A6648	KEESARI SRIRAM
49	23C31A6649	KOLA SIDDHARTHA
50	23C31A6650	KONTAM DIVYA
51	23C31A6651	KOTHA DIVYA
52	23C31A6652	KOTTURI CHAITHANYA
53	23C31A6653	KUCHANA SRAVANI
54	23C31A6654	LAKKA VARUN RAJ

55	23C31A6655	LEKKALA VARAPRASAD
56	24C35A6601	DASARI SIDDHARTHA
57	24C35A6602	JADALA SHIVA KUMAR
58	24C35A6603	KUCHANA SANDEEP
59	24C35A6604	LAKKARSU SUNNY
60	24C35A6605	MOHAMMAD ARIF AHMED
61	24C35A6606	NARUGULA SAI CHANDANA

XX. SCHEME AND SOLUTION OF INTERNAL TESTS.

In CIE, for theory subjects, during a semester, there shall be two mid-term examinations. Each Mid-Term examination consists of two parts i) **Part – A** for 10 marks, ii) **Part – B** for 20 marks with a total duration of 2 hours as follows:

1. **Mid Term Examination for 30 marks:**
   a. Part - A : Objective/quiz paper for 10 marks.
   b. Part - B : Descriptive paper for 20 marks.

The objective/quiz paper is set with multiple choice, fill-in the blanks and match the following type of questions for a total of 10 marks. The descriptive paper shall contain 6 full questions out of which, the student has to answer 4 questions, each carrying 5 marks. The **average of the two Mid Term Examinations** shall be taken as the final marks for Mid Term Examination (for 30 marks).

The remaining 10 marks of Continuous Internal Evaluation are distributed as:

2. **Assignment for 5 marks. (Average of 2 Assignments each for 5 marks)**
3. **Subject Viva-Voce/PPT/Poster Presentation/ Case Study on a topic in the concerned subject for 5 marks.**

While the first mid-term examination shall be conducted on 50% of the syllabus, the second mid-term examination shall be conducted on the remaining 50% of the syllabus. Five (5) marks are allocated for assignments (as specified by the subject teacher concerned). The first assignment should be submitted before the conduct of the first mid-term examination, and the second assignment should be submitted before the conduct of the second mid-term examination. The average of the two assignments shall be taken as the final marks for assignment (for 5 marks). Subject Viva-Voce/PPT/Poster Presentation/ Case Study on a topic in the subject concerned for 5 marks before II Mid-Term Examination.

XX-II Marks sheet

Department of Artificial Intelligence & Machine Learning

S.No	MID-I	Course Outcomes	THEORY (MAX 20)	QUIZ (MAX 10)	Assignment (MAX 5)	TOTAL (MAX 35)
	Roll No.	Distribution of Marks				
1	23C31A6601	ADAPA RAKESH	14	9	0	23
2	23C31A6602	AITHA PRAVEEN	16	6	5	27
3	23C31A6603	AKARAPU ARPAN	18	9	3	30
4	23C31A6604	AMREEN	5	10	2	17
5	23C31A6605	ARURI PAVAN	14	10	1	25
6	23C31A6606	ARUTLA AJAY	18	10	1	29
7	23C31A6607	ATLA SAIKRISHNA	17	9	5	31
8	23C31A6608	BAIRABOINA PREETHI	18	10	4	32
9	23C31A6609	BAJJURI SANTHOSH	20	9	5	34
10	23C31A6610	BALABAKTHULA MANISHA	Absent			
11	23C31A6611	BATTHULA DEEPIKA	20	10	5	35
12	23C31A6612	BEERUM LAXMI SRINIVAS	20	9	5	34
13	23C31A6613	BOINI AJAY	11	9	4	24
14	23C31A6614	BOLLENA VARSHA	20	10	5	35
15	23C31A6615	BOMMANAPELLY POOJITHA	20	10	5	35
16	23C31A6616	BURA SANJAY	17	10	4	31
17	23C31A6617	CHINNALA ARJUN	17	10	3	30
18	23C31A6618	CHINNAPALLY ASHWITHA	19	10	5	34
19	23C31A6619	CHINTHIREDDY PRAVEEN	19	10	5	34
20	23C31A6620	DARAVATH JASHWANTH	18	9	5	32
21	23C31A6621	DASARI LAHARI SRI	16	10	4	30
22	23C31A6622	DASARI SRINIVAS	17	10	3	30

23	23C31A6623	DASU SAIPRIYA	20	9	5	34
24	23C31A6624	DOLI ARCHANA	20	10	5	35
25	23C31A6625	DUDDE NITHISH	20	10	4	34
26	23C31A6626	DUPPATI PRANEETH	20	10	4	34
27	23C31A6627	EGA SHIVANI	20	9	4	33
28	23C31A6628	ELDI KARTHIK	17	10	4	31
29	23C31A6629	ENUGALA BHAVANI	19	10	4	33
30	23C31A6630	GAJJALA VARUN	20	10	5	35
31	23C31A6631	GANDHAM KARTHIK	10	10	2	22
32	23C31A6632	GANGINENI NAVEEN KUMAR	20	10	5	35
33	23C31A6633	GANJI KAVYA SHRI	20	10	5	35
34	23C31A6634	GOLI LAXMI PRASANNA	20	8	4	32
35	23C31A6635	GUJJULA RAMYA	20	10	4	34
36	23C31A6636	GUNDAMALA ARUN	5	10	2	17
37	23C31A6637	GUNISHETTI GANGOTHRI	18	10	4	32
38	23C31A6638	INDLA SANDHYA	20	10	4	34
39	23C31A6639	INTSHAR ALAM	15	10	4	29
40	23C31A6640	IPPA RITHWIK	20	10	3	33
41	23C31A6641	JANGETI KAVYA	Absent			
42	23C31A6642	KANDUKURI JAYALAXMI	20	10	5	35
43	23C31A6643	KANKALA SUSHMITHA	18	10	4	32
44	23C31A6644	KANNAM SHIVA SAI	18	9	3	30
45	23C31A6645	KARRA SAHITHI REDDY	18	10	1	29
46	23C31A6646	KASANABOINA BHASKAR	8	10	2	20
47	23C31A6647	KATLA ARUN KUMAR	12	10	4	26
48	23C31A6648	KEESARI SRIRAM	20	10	4	34
49	23C31A6649	KOLA SIDDHARTHA	10	8	4	22
50	23C31A6650	KONTAM DIVYA	20	10	4	34
51	23C31A6651	KOTHA DIVYA	20	10	3	33
52	23C31A6652	KOTTURI CHAITHANYA	18	10	4	32
53	23C31A6653	KUCHANA SRAVANI	20	10	4	34
54	23C31A6654	LAKKA VARUN RAJ	20	10	4	34

55	23C31A6655	LEKKALA VARAPRASAD	10	10	2	22
56	24C35A6601	DASARI SIDDHARTHA	Absent			
57	24C35A6602	JADALA SHIVA KUMAR	18	10	4	32
58	24C35A6603	KUCHANA SANDEEP	18	10	5	33
59	24C35A6604	LAKKARSU SUNNY	15	10	5	30
60	24C35A6605	MOHAMMAD ARIF AHMED	18	10	4	32
61	24C35A6606	NARUGULA SAI CHANDANA	18	10	4	32

XX-III Result analysis for internal Exams (tests) with respect to COs-POs

XX-IV . Result analysis for external exams (university)

XX-V . CO and PO attainment sheet

XX-VI. REFERENCES, JOURNALS, WEBSITES AND E-LINKS IF ANY

TEXT BOOKS:

1. Artificial Intelligence: A Modern Approach, Third Edition, Stuart Russell and Peter Norvig, Pearson Education

2.REFERENCE BOOKS:

1. Artificial Intelligence, 3rd Edn., E. Rich and K. Knight (TMH)
2. Artificial Intelligence, 3rd Edn., Patrick Henny Winston, Pearson Education.
3. Artificial Intelligence, Shivani Goel, Pearson Education.
4. Artificial Intelligence and Expert systems – Patterson, Pearson Education.