Model question Paper-I

CBCS SCHEME

First/ Second Semester B.E Degree Examination, 2025-26

Introduction to AI and Applications (1BAIA103/203)

TIME: 03 Hours   **Max.Marks:100**

Notes:

1. *Answer any FIVE full questions, choosing at least ONE question from each MODULE*
2. *M: Marks, L: Bloom's level, C: Course outcomes.*

		Module -1	M	L	C
Q.01	a	What is Artificial Intelligence. Explain how does AI work? List out three advantages and disadvantages of Artificial Intelligence.	8	L2	CO1
	b	Compare weak AI and strong AI.	6	L2	CO1
	c	What is Machine Learning. Relate AI and Machine Learning?	6	L2	CO1
		OR			
Q.02	a	Explain five components of Intelligence with example. Compare Inductive reasoning with deductive reasoning.	8	L2	CO1
	b	What is AI Agent? Classify the agents in an AI system.	6	L2	CO1
	c	Is Depth First Search (DFS) an informed search or uninformed search? Justify your answer	6	L2	CO1
		Module-2			
Q. 03	a	Apply ethical prompt construction to minimize bias in AI-generated content.	8	L3	CO4
	b	Develop a use-case scenario where prompt engineering improves communication clarity in cross-cultural conversations.	6	L3	CO4
	c	Design a Few-Shot Prompt that trains ChatGPT to classify customer feedback as positive, neutral, or negative.	6	L3	CO4
		OR			
Q.04	a	Apply creative prompts to generate innovative ideas for a sustainable startup project.	8	L3	CO4
	b	Develop imaginative prompts to enhance product design creativity in engineering students.	6	L3	CO4
	c	Apply LLM-based writing prompts to produce creative content for digital marketing campaigns.	6	L3	CO4
		Module-3			
Q. 05	a	Write Basic neural network model explaining the function of each layer.	8	L2	CO2
	b	"ML Model is a combination of Task, Performance and Experience", Explain with suitable an example.	6	L2	CO2
	c	Is Labelled data supervised or unsupervised machine learning? Extend your answer explaining different types of machine learning.	6	L2	CO2
		OR			
Q. 06	a	Outline K-Means Algorithm with merits and demerits.	8	L2	CO2
	b	A company decides to carry out its business operations on a rented space. If the cost of the rental space is Rs 20000 plus Rs 500 per employee per day, then compute monthly rental for space given that the company is open 5 days a week. Show a linear equation for this scenario with explanation.	6	L2	CO2
	c	Explain the four steps to create Decision Trees with suitable example for each step.	6	L2	CO2
		Module-4			

Q. 07	a	List and explain any four Trusted AI principles.	8	L2	CO5
	b	What is expert system? Explain three components of expert system.	6	L2	CO5
	c	Relate the role of ethics in AI.	6	L2	CO5
OR					
Q. 08	a	Explain the working of an expert system taking any example.	8	L2	CO5
	b	AI could be programmed to do something beneficial, but the method used to achieve its goal can be highly destructive, Explain why?	6	L2	CO5
	c	What is Artificial Intelligence of Things (AIoT). Explain how Does AIoT Work?	6	L2	CO5
Module-5					
Q. 09	a	List different types of Robots. Identify and explain industry application of Robots.	8	L3	CO3
	b	What is No-Code AI. Explain why No-Code AI Must be Used?	6	L2	CO3
	c	Explain the role of AI in early disease prevention.	6	L2	CO3
OR					
Q. 10	a	What is the role of AI in Medical Diagnosis? Identify three applications of AI in Medical Diagnosis.	8	L3	CO3
	b	Relate the role of AI in Biology and Environmental Sciences.	6	L2	CO3
	c	What is Low Code AI. Compare Traditional tools with Low Code AI.	6	L2	CO3

Model Question Paper – II with effect from 2025-26 (CBCS Scheme)

USN

First/Second Semester B.E. Degree Examination

Subject Title: Introduction to AI and Applications

TIME: 03 Hours

Max. Marks: 100

Note:
1. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
2. Provide block diagrams wherever necessary.
3. Missing data may be suitably assumed.

		Module -1	**M**	**L**	**C**
Q.01	a	Define Artificial Intelligence (AI). Explain how do AI systems work and give advantages and disadvantages of this technology.	8	L2	CO1
	b	Differentiate between the following: (i) Inductive and deductive reasoning (ii) Human and machine intelligence (iii) Episodic and non – episodic environment	6	L2	CO1
	c	What are knowledge – based agents? Explain their role and architecture of agent based system.	6	L2	CO1
		OR			
Q.02	a	Outline the merits and demerits of the following search algorithms. (i) Breadth First Search (BFS) (ii) Uniform Cost Search (UCS) (iii) Depth – First Search (DFS)	8	L2	CO1
	b	Compare traditional programming with machine learning.	6	L2	CO1
	c	Summarize the major phases in AI evolution.	6	L2	CO1
		Module-2			
Q. 03	a	A user repeatedly gets ambiguous answers from an AI tool. Apply prompt - engineering strategies to redesign the prompt to improve clarity and intent.	8	L3	CO4
	b	Build a zero-shot prompt to classify comments as positive or negative. Explain why it qualifies as zero-shot.	6	L3	CO4
	c	Develop a writing prompt that helps a student begin an essay on "The Impact of Social Media on Teenagers." Explain how the prompt stimulates the writing process.	6	L3	CO4
		OR			
Q.04	a	You are building a customer – support assistant using a Large Language Model (LLM). Develop a prompt that ensures the model responds politely and provides step-by-step troubleshooting guidance. Explain how your prompt uses principles of prompt engineering.	8	L3	CO4
	b	Develop a one-shot example to help an LLM convert active voice to passive voice. Illustrate with the example and the instruction.	6	L3	CO4
	c	Build a creative prompt that encourages ChatGPT to propose futuristic transportation ideas. Explain how this promotes imaginative thinking.	6	L3	CO4
		Module-3			
Q. 05	a	Explain how Linear Regression, Logistic Regression, and Polynomial Regression can be applied to analyze and predict real-world data in Artificial Intelligence and Machine Learning.	8	L2	CO2
	b	Define conditional probability and the Bayes rule with examples.	6	L2	CO2
	c	Differentiate between the following: (i) Supervised and Unsupervised Machine Learning (ii) Forward and Backward Propagation	6	L2	CO2

		(iii) Classification and Regression			
		OR			
Q. 06	a	Explain how Machine Learning, Deep Learning, and Natural Language Processing techniques can be applied to solve real-world problems in Artificial Intelligence.	8	L2	CO2
	b	Summarize the features of: (i) Reinforcement Learning (ii) Support Vector Machines (SVM)	6	L2	CO2
	c	How does computer vision work with deep learning? Explain the tasks involved in computer vision.	6	L2	CO2
Module-4					
Q. 07	a	What is Neuromorphic Computing? Explain its architecture, features resembling the human brain, and how it contributes toward achieving Artificial General Intelligence (AGI).	8	L2	CO5
	b	Describe the concept of AI as a Service (AIaaS). Outline two advantages and two challenges of using AIaaS in organizations.	6	L2	CO5
	c	List and explain the risks associated with Artificial Intelligence and their societal impact.	6	L2	CO5
		OR			
Q. 08	a	Explain AI Bias. Describe the sources of bias, real-world examples, and methods to mitigate bias in AI systems.	8	L2	CO5
	b	Explain the major components of an Expert System with their functions.	6	L2	CO5
	c	Differentiate between the following: (i) AI Programs and Robots (ii) Human–controlled and fully – autonomous bots	6	L2	CO5
Module-5					
Q. 09	a	Identify the application of AI in education, specifically in personalized learning experiences. Explain with examples, how adaptive learning platforms and intelligent tutoring systems use AI to tailor educational content and provide customized support for students.	10	L3	CO3
	b	Explain how AI contributes to environmental science by breaking down its role in climate modelling, air and water quality monitoring, waste management, and resource conservation. Describe the specific data, techniques, and decision-making processes involved in each area.	10	L2	CO3
		OR			
Q. 10	a	Identify the role of AI in scientific experimentation by examining how it supports different disciplines and breaking down the specific experimental activities such as data collection, pattern identification, simulation, and hypothesis testing that AI enhances.	10	L3	CO3
	b	Compare AI – enabled precision farming with traditional farming. Outline the key differences in data usage, cost, and productivity.	10	L2	CO3

*Revised Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.