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EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institution Affiliated to Visvesvaraya Technological University (VTU) Belagavi

USN | | | | | | | | | | |

25MPD13

First Semester M.Tech Degree Examination, March 2026

Introduction to AI and ML

TIME:3 hrs. Max.Marks:100

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

		Module-1	M	L	C
Q.1	a	What is Artificial Intelligence. Explain how does AI work? List out three advantages and disadvantages of Artificial Intelligence.	8	L2	CO1
	b	Differentiate between the following: Inductive and deductive reasoning Human and machine intelligence Episodicandnon–episodic environment	6	L2	CO1
	c	What are knowledge–based agents ? Explain the irroleand architecture of agent based system.	6	L2	CO1
		OR			
Q.2	a	Outline the merits and demerits of the following search algorithms. Breadth First Search (BFS) Uniform Cost Search(UCS) 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.3	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.4	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

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		Module–3			
Q.5	**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**
		OR			
Q.6	**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.7	**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 AI as in organizations.	**6**	**L2**	**CO5**
	c	List and explain the risks associated with Artificial Intelligence and their societal impact.	**6**	**L2**	**CO5**
		OR			
Q.8	**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: AI Programs and Robots Human–controlled and fully–autonomous bots	**6**	**L2**	**CO5**
		Module–5			
Q.9	**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**

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