

Basavarajeswari Group of Institutions

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT
 (Autonomous Institute under Visvesvaraya Technological University, Belagavi)

2024 SCHEME

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Course Code

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Fourth Semester MCA Degree Examinations, May/June 2026

AGENTIC AI

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
 2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO: PI)</u>
<u>MODULE – 1</u>			
1.	a. Describe the concept of <i>Agentic AI</i> . Illustrate its key capabilities by examining the core components and associated challenges.	10	(2:1:1.4.1)
	b. Examine and analyze the role of <i>Agentic AI</i> in research assistance by applying its key capabilities to academic or industrial research tasks.	10	(3:1:2.5.2)
(OR)			
2.	a. Interpret the <i>Perceive–Think–Act</i> loop and explain its role in the functioning of intelligent agents.	10	(2:1:1.4.1)
	b. Analyze and apply the <i>Sense–Think–Act</i> cycle to demonstrate its use in real-world applications of AI agents.	10	(3:1:2.5.2)
<u>MODULE – 2</u>			
3.	a. Explain the concept of a rational agent. Discuss how environment modelling influences rational decision-making in intelligent agents with suitable examples.	10	(2:2:1.4.1)
	b. Design a rational agent for a real-world application of your choice. Explain how environment modelling and perception–action mechanisms are applied.	10	(3:2:2.5.2)
(OR)			
4.	a. Explain the BDI agent architecture by clearly discussing the roles of beliefs, desires, and intentions. Illustrate its operation with a suitable scenario.	10	(2:2:1.4.1)
	b. Apply the STRIPS planning technique to solve a given planning problem by defining the initial state, goal state, actions, and plan execution.	10	(3:2:2.5.2)
<u>MODULE – 3</u>			
5.	a. Explain the core components and capabilities of agentic frameworks and tools used in AI applications.	10	(2:3:1.4.1)
	b. Explain the core components of LangChain and illustrate how they are used to build applications.	10	(3:3:2.5.2)
(OR)			
6.	a. Describe the architecture and working of agentic frameworks such as LangChain, AutoGPT, and BabyAGI.	10	(2:3:1.4.1)

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| b. | Explain reasoning-based prompting techniques, their key components, and demonstrate how they improve decision-making in agentic systems. | 10 | (3:3:2.5.2) |
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MODULE – 4

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| 7. | a. | Explain the role of agent communication languages and protocols in multi-agent systems, and illustrate how they enable interaction between | 10 | (2:4:1.4.1) |
| | b. | Illustrate the application of multi-agent systems in gaming with a suitable real-world example. | 10 | (3:4:2.5.2) |

(OR)

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| 8. | a. | Describe the core components, key characteristics, and structure of multi-agent systems with suitable examples. | 10 | (2:4:1.4.1) |
| | b. | Explain how multi-agent systems are applied in swarm robotics and demonstrate their real-world use cases. | 10 | (3:4:2.5.2) |

MODULE – 5

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| 9. | a. | Explain the key applications of Agentic AI in automation and illustrate how they improve operational efficiency. | 10 | (2:5:1.4.1) |
| | b. | Explain how Agentic AI is applied in customer support systems and demonstrate its benefits with an example. | 10 | (3:5:2.5.2) |

(OR)

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| 10. | a. | Explain the concept of hallucination in Agentic AI systems and discuss its impact on decision-making. | 10 | (2:5:1.4.1) |
| | b. | Describe the principles of ethical Agentic AI design and demonstrate safety mechanisms used to ensure responsible AI behaviour. | 10 | (3:5:2.5.2) |

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