



# VIT

Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

## Continuous Assessment Test - II (CAT - II) - March 2022

Programme	: B. Tech CSE with Specialisation in AIR	Semester	: Winter' 2021-22
Course	Fundamentals of Autonomous Systems	Code	: CSE2038
		Class Nbr	: CH2021225000994 CH2021225000992
Faculty	: Dr. Ganala Santoshi and Dr. Christy Jackson J	Slot	: D1 + TD1
Time	: 90 Minutes	Max. Marks	: 50

Answer all the Questions

1. Consider a scenario of autonomous elevator. Sensors are fixed to identify whether passengers are waiting for the elevator or not. In case of absence of passengers at all the floors the elevator should stop at the beginning point of the current run.

For the given scenario appraise the behaviour of the conception agent. Explain in detail about the internal macro automaton that structures the action of a conception agent with suitable diagrams.

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2. Consider a scenario where multiple unmanned aerial vehicles are programmed to reach a fixed single destination. One unmanned aerial vehicle from the group has missed its predefined route and failed to reach the destination. However, its previous travel routes to the same destination are successful and the information related to the travels are stored in memory. Communication between all the unmanned aerial vehicles is still live.

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For the given scenario highlight structuring agents, conception agents and emerging representations with suitable diagrams.

3. Consider a scenario of drones designed to carry hazardous materials, where human intervention is not possible. Source is fixed and destination will be decided as per the need. Weather conditions and routes are predefined and trained during the simulation.

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For the given scenario, elaborate the list of main agents of the system.

4. Consider a scenario of autonomous car moving in the busiest roads of a city. During the movement functional substratum always triggers the various component / sub systems states on the display board. It is observed that, few components / sub systems are identified as functioning not normal.

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Highlight and relate the various states of operation of components / sub systems.

5. Consider a scenario of multiple autonomous systems (robots) is designed to participate in the war. Out of all the robots, one robot will be selected as leader and all other robots have to follow the orders of the leader robot. After duration of 'T' hour, all the followers robots need to participate in the process for the selection for new leader. New leader will be selected based on the performance showed in the past.

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For the above given scenario explain the need for presentations of artificial tendencies in 5 points.

like action