Register No.: ……………………………    Name: ………………………………………………………..

# SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIRST SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022**
*ROBOTICS AND AUTOMATION*
**(2021 Scheme)**

Course Code :     **21RA105-A**

Course Name:     **AI for Robotics**

Max. Marks  :     **60**                          **Duration: 3 Hours**

## PART A
*(Answer all questions. Each question carries 3 marks)*

1. Discuss the advantages of Hybrid Paradigms.
2. List any three areas of Artificial Intelligence.
3. Explain Schema Theory.
4. What do you mean by Multiagents?
5. Define a gateway.
6. Explain HIMM.
7. Explain the risks associated with AI in Robotics.
8. Explain Intelligent agents.

## PART B
*(Answer one full question from each module, each question carries 6 marks)*

### MODULE I

9. Describe the three Robotic paradigms in detail, with necessary diagrams.     (6)

**OR**

10. Describe the evolution of Robotics.     (6)

### MODULE II

11. a) Describe the Reactive Paradigm.     (2)
     b) Explain how the Reactive Paradigm is used to program complex behaviors.     (4)

**OR**

12. Explain the positive and negative attributes of Reactive Paradigm.     (6)

### MODULE III

13. a) Discuss the application of a Sensor Suite.     (2)
     b) Design a simple Sensor Suite with at least three sensors.     (4)

**OR**

14. List and explain any three attributes that a sensor should have.     (6)

## MODULE IV

15. Describe the four questions a Robotic Navigation system should answer. (6)

**OR**

16. Explain the Topological Path Planning in detail. (6)

## MODULE V

17. a) Explain the Damper-Shafer Theory. (4)
    b) Give one application of the Damper-Shafer Theory. (2)

**OR**

18. a) Describe legged Robots (2)
    b) Explain any two practical applications of legged robots. (4)

## MODULE VI

19. Explain why Artificial Intelligence is necessary in Robotics. (6)

**OR**

20. Describe how Robots plan for uncertain motions. (6)

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