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**Question Paper Code: U5M01**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Fifth Semester

Computer Science Engineering

(Artificial Intelligence And Machine Learning)

21UAM501 INTELLIGENT ROBOTS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 2 = 20 Marks)

1. Write the Laws of Robotics CO1-U
2. What are the types of Drive System used in Robots? CO1-U
3. How the Robots are grouped? CO1-U
4. Which type of Drive is suitable for Heavy Load Applications? CO1-U
5. What are some common programming languages used in robotics? CO1-U
6. What are the different generations of Programming Language? CO1-U
7. What are the different Robot Applications in Industries? CO1-U
8. What roles do robots play in nuclear power plants? CO1-U
9. What is the Workspace of Robot? CO1-U
10. What are the different levels of Robotic languages? CO1-U

PART – B (5 x 16 = 80 Marks)

11. (a) Describe about Robotics Automation. Distinguish between Hard Automation and Flexible Automation with examples. CO1-U (16)  
Or  
(b) The Population of Robots worldwide is increasing. Discuss about the factors contributing to this growth? CO1-U (16)
12. (a) Explain about degree of freedom (DOF)? How many DOF's are required to position an end-effector at any point in 3-D Space? CO1-U (16)  
Or  
(b) Explain in detail different types of actuators used for Robot End Effectors? State the advantage of each actuator. CO1-U (16)

13. (a) Explain in detail different Robot Application in Industries? CO1-U (16)  
Or  
(b) Explain the functioning of the following textual robot language commands: (i) DMOVE (ii) REACT (iii) CLOSE 40mm CO1-U (16)
14. (a) Robots still cannot replace humans in several industrial applications. List the applications where a robot still cannot be applied and why? CO2-App (16)  
Or  
(b) Robotics is also finding applications in education and entertainment. Briefly explain a few applications how robotics can help in education. CO2-App (16)
15. (a) Explain the Characteristics of Future Robot tasks. CO1-U (16)  
Or  
(b) Explain in detail the basic rules and procedures followed in the use of Robots Assembly. CO1-U (16)