

Name:	
Enrolment No:	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**Supplementary Examination, May 2022**

<b>Course:</b> B. Tech CSE+AI/ML	<b>Semester:</b> IV
<b>Program:</b> Algorithm for Intelligent System and Robotic	<b>Time</b> : 03 hrs.
<b>Course Code:</b> CSAI2004	<b>Max. Marks:</b> 100

**Instructions:**

**SECTION A**  
**(5Qx4M=20Marks)**

S. No.		Marks	CO
Q 1	Define Intelligent System. List down four examples of intelligent systems.	4	CO1
Q 2	Write down the laws of robotics.	4	CO1
Q 3	Discuss computational theory of intelligent system.	4	CO1
Q 4	Write down three widely used simulators for simulating a robot in ROS.	4	CO3
Q 5	Differentiate between depth cameras and visual cameras.	4	CO3

**SECTION B**  
**(4Qx10M= 40 Marks)**

Q 6	Explain the real-time Control System and discuss importance of computational theory for any intelligent system.	10	CO1
Q 7	Write down the algorithm of N-Queens's problem. Discuss its important in real life.	10	CO1
Q 8	Explain the architecture of ROS navigation stack.	10	CO3
Q 9	Discuss ROS. Explain the file system level of ROS.  <b>OR</b> Explain the working of Optoelectronic Sensors.	10	CO3

**SECTION-C**  
**(2Qx20M=40 Marks)**

Q 10	Explain the generic model of machine vision system.	20	CO2
Q 11	A. Explain the three layer architecture of robotic system. B. Discuss the Bayes statistics to design an intelligent robot. <b>OR</b> A. Explain the working of Sonar sensors. B. Explain the architecture of NN with different layers design.	10x2= 20	CO2