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PRESIDENCY UNIVERSITY BENGALURU

**SET-A**

SCHOOL OF ENGINEERING

**END TERM EXAMINATION – MAY/JUNE 2024**

**Semester :** Semester VI - 2021

**Course Code :** MEC3076

**Course Name :** - Human Robot Interaction

**Program :** B. Tech.

**Date :** June 10, 2024

**Time :** 1:00 PM - 4:00 PM

# Max Marks : 100

**Weightage :** 50%

# Instructions:

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

**PART A**

**ANSWR ANY 5 QUESTIONS 5Q X 2M=10M**

1. Write all 4 configurations of robots?

(CO1) [Knowledge]

1. Which company has developed Asimo Robot and how many degrees of freedom it has?

(CO1) [Knowledge]

1. Which company developed Sophia Robot and what was the objective of it?
2. Write the components of Robotic Vision System.
3. What is transducer?
4. What sensors are used for audio?
5. Write any 4 types of non verbal interactions used in Human Robot Interaction.

(CO1) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge] (CO3) [Knowledge]

**PART B**

**ANSWR ANY 5 QUESTIONS 5Q X 10M=50M**

1. What is Robot and explain all 3 Asimov’s Laws of Robotics. Also explain in brief evolution of Human Robot Interaction.

(CO1) [Comprehension]

1. List the types of Actuators and explain about any three of them.

(CO2) [Comprehension]

1. Explain in detail about Gaze and eye movement, Gesture and Mimicry and Imitation used in Human Robot Interaction with applications for each of it.

(CO3) [Comprehension]

1. List all the types of Gesture and explain each of them in detail. Also write few applications for gesture nonverbal interaction.

(CO3) [Comprehension]

1. Explain in detail about the application of Human Robot Interaction in several sectors.

(CO4) [Comprehension]

1. Explain in detail about the Personal Assistant robots and Robots for entertainment which are using the concepts of Human Robot Interaction.
2. Explain the working principle of Robotic Vision System with neat diagram.

(CO4) [Comprehension] (CO2) [Comprehension]

**PART C**

**ANSWR ANY 2 QUESTIONS 2Q X 20M=40M**

1. List all the non verbal interactions used in Human Robot Interaction and explain any five of them in detail with applications of it.

(CO3) [Application]

1. Explain in detail about applications of these robots in Human Robot Interaction a) Service Robots, b) Tour Guide Robots, c) Reception Robots, d) Personal Assistants Robots, e) Security Robots.

(CO4) [Application]

1. a) Write the types of robots and explain any 2 of them with applications.
   1. Explain in brief the Human Robot Interaction as an interdisciplinary endeavor
   2. What is Work Volume and write all the parameters which impact the size of work volume.

(CO1) [Application]