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**PRESIDENCY UNIVERSITY
BENGALURU**

SET - A

**SCHOOL OF ENGINEERING
END TERM EXAMINATION – MAY/JUNE 2024**

Semester : Semester VIII - 2020

Course Code : MEC3065

Course Name : Introduction to Robotics and Automation

Program : B.Tech.

Date : May 31, 2024

Time : 01.00pm - 04.00pm

Max Marks : 100

Weightage : 50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ANY FIVE QUESTIONS

5QX2M=10M

1. Write down any four types of grippers used in automated Industry.
(CO1) [Knowledge]
2. List out all types of joint used in robotic system.
(CO1) [Knowledge]
3. Differentiate Rotary Joint & Twisting joint.
(CO1) [Knowledge]
4. What are the different uses of sensors in robotics?
(CO2) [Knowledge]
5. What are applications of touch sensors?
(CO2) [Knowledge]
6. Define Calibration and Reliability.
(CO2) [Knowledge]
7. Write full form of SCADA and also write 3 components of SCADA.
(CO3) [Knowledge]

PART B

ANSWER ANY FIVE QUESTIONS

5QX10M=50M

8. End Effectors are devices which is attached to the robots wrist to perform a specific task. With suitable application, List and Explain any 3 different types of End Effectors.
(CO1) [Comprehension]

9. Explain the working principle of robotic vision system and their components along with neat sketch.
(CO2) [Comprehension]
10. Write any 5 advantages of Automation. Also write any 5 applications of automation.
(CO3) [Comprehension]
11. List all the building blocks of automation and explain each of them.
(CO3) [Comprehension]
12. Write a short note on both Control System and Automation system. Explain the Industrial control system used in automation.
(CO4) [Comprehension]
13. Explain the Discrete Control System (time driven) and Discrete control system (event driven) used in automation with examples.
(CO4) [Comprehension]
14. Explain the working of Ultrasonic Sensors and their applications. How do you measure the distance between objects and sensors using Ultrasonic Sensors?
(CO2) [Comprehension]

PART C

ANSWER ANY TWO QUESTIONS

2QX20M=40M

15. SCADA is one of the automation tool widely used across the industries. What is SCADA?. Write the full form of SCADA and explain in detail about SCADA along with components of SCADA. Also write the need for SCADA. Write any 4 applications of it.
(CO3) [Application]
16. Explain the Computer Process Control in detail. Also write the forms of computer process control. Explain the requirements of control system used in computer process control.
(CO4) [Application]
17. a) Explain about the anatomy of robot structure in detail. Also explain about all joints used in robots with neat sketch and list all configurations of robots.
b) Explain about any 3 End effectors used as grippers.
(CO1) [Application]