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**PRESIDENCY UNIVERSITY
BENGALURU**

SET A

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024**

Semester : Semester VII - 2020

Course Code : MEC3060

Course Name : Robotics

Program : B.Tech.

Date : 10-JAN-2024

Time : 9:30AM - 12:30 PM

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 ALL THE QUESTIONS

4 X 5M = 20M

1. List and explain Slip/Skid type of locomotion. (CO1) [Knowledge]
2. What are the differences between sensors and transducers? (CO2) [Knowledge]
3. What are ultrasonic sensors ? (CO3) [Knowledge]
4. With Suitable diagram explain the anatomy of robots. (CO4) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

5 X 10M = 50M

5. Robot anatomy is concerned with the physical construction of the body, arm and wrist of the machine. With suitable diagram explain the Robot anatomy. (CO1) [Comprehension]
6. When an a.c flows in a coil an alternating magnetic field is generated in the coil. If a metal rod is placed in close proximity to this alternating magnetic field then a current is induced known as eddy current. Suggest and explain any type of sensor that works on the principle of eddy current. (CO2) [Comprehension]
7. With suitable example explain the differences between Holonomic drive and Non-holonomic drive. (CO3) [Comprehension]

8. With Suitable diagram explain Inductive type proximity sensors.

(CO3) [Comprehension]

9. List and explain three different functions of robot vision system.

(CO4) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

2 X 15M = 30M

10. What are proximity sensors ? With suitable diagram explain the working of Capacitive proximity sensors and discuss its applications.

(CO3) [Application]

11. With suitable diagram explain position representation and reverse transformation of two degree arm.

(CO5) [Application]