

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 2111 GC-3 Your Roll No.....

Unique Paper Code : 32513903

Name of the Paper : SEC-2 Robotics

Name of the Course : **B.Sc. (H) Electronics Under CBCS
Skill Enhancement Course**

Semester : III

Duration : 1 Hour

Maximum Marks : 25

Instructions for Candidates

1. Write your Roll No. on the top immediately on the receipt of this question paper.
2. Question Paper consists of **two** parts.
3. Attempt any **five** questions from **Part A** and any **ten** questions from **Part B**.

PART A (Attempt any five)

(1×5=5)

1. List two modes in which 16x2 LCD can interface with an AVR microcontroller.
2. What are the uses of a gyroscope ?
3. What is the role of actuators in Robots ?
4. Give the rotation matrix for rotation along z-axis.
5. What is the frequency range of infrared ?
6. What does AVR stands for in AVR microcontrollers ?
7. Give examples of the embedded systems that uses buzzer as an output device.

P.T.O.

Part B (Attempt any Ten)**(2×10=20)**

1. What do you understand by reverse kinematics ?
2. List the four rules that are used in deciding the introduction of a robot for a particular job ?
3. What is an LCD ? What is the number of data pins required to interface an 16X2 LCD module with the microcontroller ?
4. What is the difference between dc motor and servo motor ?
5. What is a robot ? What are its applications ?
6. List different ways in which a robot can communicate with the other devices.
7. What is a proximity sensor ? How does it work ?
8. Explain how does an accelerometer measure acceleration ?
9. What are the positioning sensors ? Give examples.
10. How pulse width modulation can be used to control the speed of the motor ?
11. Why are ADC and DAC required in robots ?
12. What is a magnetometer ? How does it helps in localization of robot ?
13. How does an IR sensor measure distance ?