**Unit-wise Important questions**

**Unit-I**

1. What is an Embedded System? Explain the different categories of ES.
2. Explain in detail the hardware architecture of an Embedded System.
3. What are the recent trends in Embedded Systems?
4. Write short notes on real-time embedded systems.
5. What are the differences between a microprocessor and a microcontroller?
6. What is an Embedded Controller? Explain about the core elements of a Microcontroller.
7. Give an overview on Robots and Robotics.
8. Give an explanation on different types of robots.

**Unit-II**

1. What are the different types of sensors in robotics?
2. Explain about the degrees of freedom with example.
3. Explain in detail about the classification of robots.
4. (a) Write short notes on Robot anatomy.

(b) Explain about different types of joints.

5. Write short notes with neat diagram on

(a) DC motor

(b) Stepper motor

(c) Servo motor

6. Write a note on gears mechanism and different types of gears in robotics?

7. Write short notes on robot programming and the software used for programming.

**Unit-III**

1. Explain the features of AVR microcontroller with a neat sketch of the AVR family architecture.
2. Write short notes on the register file of AVR microcontroller.
3. Draw the pin diagram of AtMega32 microcontroller and give its pin description.
4. Write short notes on AVR
5. I/O ports
6. Timers
7. Interrupts
8. Explain about the USART serial communication in AtMega32 microcontroller.
9. Explain about the memory organization in AVR microcontroller.

**Unit-IV**

1. Explain the ARM core data flow model with neat diagram.
2. Explain about the three states of ARM processor.
3. Explain about different processor modes in ARM.
4. Explain in detail about the Current program status register.
5. Write short notes on different register in ARM processor.
6. Write about the exceptions and interrupts with interrupt vector table in ARM processor.
7. Write short notes on pipeline concept in ARM processor.

**Unit-V**

1. Write Short notes on
2. Robotic Perception
3. Localization
4. Mapping – Configuration space
5. Explain about Fine motion planning for planning uncertain movements in robots.
6. Explain about different controllers used for controlling a robot.
7. What are the Ethics and Risks of Artificial Intelligence in Robotics?