BE1-R4: EMBEDDED SYSTEMS

NOTE:

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.

a) What are the applications of embedded system?
b) Write the important features of ARM processor used in embedded system?
c) What happens if an interrupt is signaled while the interrupts are disabled?
d) Differentiate registers from memory.
e) State Moore's Law and its implication.
f) What do you mean by security modeling?
g) Explain the difference between Black-box and White-box testing.

(7x4)

2.

a) Justify whether an embedded system can also be treated as a dedicated system.
b) Write a short note on System-on-Chip.
c) Name and briefly discuss the different addressing modes that are offered by 8051 microcontroller.

(4+5+9)

3.

a) What are the functions of memory?
b) Explain Memory and IO Devices Interfacing (Memory Mapped I/O).
c) Explain UART.

(2+8+8)

4.

a) Define Task.
b) Define Semaphore.
c) Explain Priority Inversion Problem.

(4+4+10)

5.

a) In what ways CISC and RISC processors differ?
b) What does the execution unit of a processor in an embedded system do?
c) What is I2C? What are the bits in I2C corresponding to?
d) What is USB? Where is it used? What are the features of the USB protocol?

(5+3+[2+2]+[2+2+2])

6.

a) Explain Multiple Tasks and Multiple Processes?
b) Explain Watchdog Timer.

(8+10)

7. Write short notes on **any three** of the following:

a) Analogue to digital converter
b) Application-Specific Processor
c) Architecture of PIC
d) Rate Monotomic Co-operative Scheduling

(3x6)