

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) Differentiate between CISC and RISC.
 - b) Explain pipelining.
 - c) Define Task Control Block (TCB).
 - d) Define characteristics of PIC microcontroller.
 - e) Define design methodologies of ESD.
 - f) Define memory system architecture.
 - g) Explain DMA controller.

(7x4)

2.
 - a) What do you mean by embedded system? How is it different from a general-purpose computer?
 - b) What do you mean by embedded system design process? State its importance.
 - c) Specify the requirements involved in embedded system design process.

(6+6+6)

3.
 - a) Explain Watchdog timer.
 - b) Differentiate between microprocessor and microcontroller. Explain architecture of PIC microcontroller.

(9+9)

4.
 - a) Define architecture of RTOS. Differentiate between soft and hard real time systems.
 - b) Discuss and explain priority inversion problem.

(9+9)

5.
 - a) Explain VLIW architecture.
 - b) Discuss shared data problem in RTOS.
 - c) Explain criteria for choosing RTOS.

(6+6+6)

6.
 - a) What are the benefits of using a general-purpose processor in the case of designing an embedded system? In this context, describe the benefits of using a standard single-purpose processor instead of using a general-purpose one.
 - b) Differentiate registers from memory. Compare Princeton architecture and Harvard architecture. How is Cache memory related to embedded computing system?

(9+9)

7. Write short notes on any **three** of the following:
 - a) IrDA
 - b) UART
 - c) USB
 - d) CAN

(3x6)