



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Tech/ME (IT)/SEM-2/PGEIT-201/2010**

**2010**

**EMBEDDED COMPUTER SYSTEM**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

Answer Question No. 1 and any four from the rest.

1. Answer any five of the following : 5 × 2 = 10

- i) What are the important features of HW/SW Co design ?
- ii) What do you mean by system specifications for designing an embedded system ?
- iii) What are the advantages of FPGAs over ASICs and vice-versa ?
- iv) What do you understand by the term MIPS, FLOPS and CPI ?
- v) What are the important features of a logic analyzer ?
- vi) Why is a CRO not adequate for testing embedded system ?



2. What is embedded system ? Why Embedded system so important ? Give ten examples of embedded system in your daily life. What are the temporal requirements of Embedded systems ? What are the significance of Y-Chart ?

3 + 2 + 5 + 2 + 3

3. Explain the different hardware and software issues in designing an Embedded systems. Give and explain the flow chart of Embedded system Development Cycle. 10 + 5

4. What are the characteristics of a priority driven scheduling algorithm ? An “EDF algorithm is a dynamic priority algorithm”. Explain with the example. What is weighted Round Robin scheduling ? 3 + 10 + 2

5. a) FPGA and CPU both are programmable devices. Then what are the advantages of FPGAs over CUPS ?

- b) Let's assume that an FPGA is connected with a microprocessor as a co-processor. Bit-streams of different functions are stored in an EPROM. Whenever the microprocessor needs the FPGA to execute a particular function it issues a command to a logic circuit which in turn generates the appropriate acknowledgement signal to the microprocessor. Draw the block diagram of such a configuration indicating all the necessary signals that will be generated by the logic circuit and explain its operations.

- c) Explain the general architecture of FPGA. 3 + 7 + 5



6. a) What are the advantages of DSP over Analog Signal Processing ? Give the some difficulties of DSP. Draw and explain the block diagram of DSP processor.
- b) Give a generalized block diagram to show how a processor will be interfaced with I/O subsystems ?
- c) Why is RTOS used in some Embedded Systems ?

9 + 5 + 1

7. a) What are the different testing phases for designing an Embedded system ? Indicate the different testing tools.
- b) What is JTAG ? How does a Basic Boundary Scan Cell (BSC) work ?
- c) What is ICE (In-Circuit Emulator) ?

5 + 7 + 3

