



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.TECH (ECE-VLSI)/SEM-2/MVLSI-201/2013  
2013**

**PROCESSOR ARCHITECTURE FOR VLSI**

Time Allotted : 3 Hours

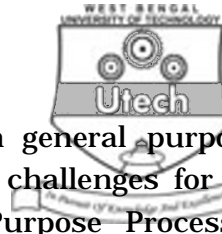
Full Marks : 70

*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 the following : 7 × 2
- a) Define embedded system.
  - b) What do you understand by Application Specific Processor ( ASIP ) ?
  - c) How is full-costom VLSI different from semi-custom VLSI ?
  - d) What is register-pipelining ?
  - e) Explain Single Program Multiple Data ( SPMD ) computer architecture.
  - f) What do you understand by Instruction Set Architecture ( ISA ) ?
  - g) How is Harvard architecture different from Von Neumann architecture ?



2. How is embedded system different from general purpose computing system ? What are the design challenges for an embedded system ? Explain General Purpose Processor ( GPP ). What are the advantages and disadvantages of GPP with respect to SPP ? 3 + 4 + 3 + 4
3. Distinguish ISA from Micro-architecture. What do you understand by code density ? What is CISC ? How is RISC different from CISC ? What is MISC ? Explain superscalar architecture. 2 + 2 + 2 + 3 + 2 + 3
4. Explain the concept of parallel computing. Classify applications according to how often their subtasks need to communicate with each other and give explanation for the same. What is consistency model for Parallel Programming Languages ? What are the different types of parallelisms ? 4 + 4 + 2 + 4
5. Introduce Digital Signal Processor ( DSP ). Explain typical characteristics of DSP. Explain DSP architecture along with program flow and data operation in detail. 1 + 4 + 9
6. Explain Flynn's taxonomy. What do you understand by parallelism ? Explain different types of parallelism. What is Multicore computing and how does it differ from Symmetric Multiprocessing ( SMP ) ? 4 + 1 + 6 + 3
7. Write short notes on any *four* of the following :  $4 \times 3 \frac{1}{2}$ 
  - a) Single Purpose Processor ( SPP )
  - b) Von Neumann Architecture
  - c) Watchdog timer
  - d) ARM architecture
  - e) Explicitly parallel instruction computing ( EPIC )
  - f) Very long instruction word ( VLIW ).