ADVANCED COMPUTER ARCHITECTURES – 17CS72

ASSIGNMENT 1

1. Explain the evolution of computer architecture.
2. Explain Flynn's classification of computer architecture.
3. Explain with diagram the operational model of SIMD super computer.
4. Define data dependency. Explain different functions o data dependency with the help of dependency graph.
5. Explain the Bernstein's conditions for parallelism. Detect the parallelism in the following code using Bernstein's conditions. (Assume no pipeline)

   P1: C = D x E;

   P2: M = G + C;

   P3: A = B + C;

   P4: C = L + M;

   P5: G ÷ E
6. A 4 MHz processor was used to execute a benchmark program with the following instruction mix and clock cycle counts.

Instruction type	Instruction count	Cycles/ instruction
Integer arithmetic	45000	1
Data transfer	32000	2
Floating point	15000	2
Control transfer	8000	2

   Determine the effective CPI, MIPS rate and execution time for this program.
7. Explain the working of a Vector Super Computer?
8. Distinguish between typical RISC and CISC process architectures.
9. With a diagram, explain the models of a basic scalar computer system.
10. With a diagram, explain a typical superscalar RISC processor architecture consisting of an integer unit and a floating point unit.
11. Explain the architecture of VLIW processor and its pipeline operations.
12. With a diagram, explain the hierarchical memory technology.
13. Explain page replacement policies with the help of an example.

14. Give the characteristics of symbolic processors.