53 (IT 714) ACAR

2019

ADVANCED COMPUTER ARCHITECTURE

Paper : IT 714 (Back)

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Discuss the Von Neumann's Architecture. Write some limitations of sequential machines. 10

   (b) Define Pipelining, Data Parallelism, Bandwidth of memory and processor and utilization bandwidth. 10

2. *(a)* What is Parallel Processing? Explain with the help of CDC 6600 architecture, how multiple functional units can achieve parallelism in uniprocessor system. 10

Contd.

(b) What are the differences between Multiprocessor and Multicomputer systems? Discuss the classification of parallel computers. 10

3. (a) Discuss various parallel processing mechanisms for uniprocessor systems. 10

(b) Discuss the Feng's classification and classification based on Grain size for parallel architecture. 10

4. (a) A program is run on a 40 *MHz* CPU with different types of instructions and corresponding Clock cycle count as mentioned in the table below. Determine —

(i) Effective CPI

(ii) Execution Time

(iii) MIPS rate for the program

Instruction type	Clock cycle count	Instruction count
1. Integer Arithmetic	1	45000
2. Floating point	2	32000
3. Data transfer	2	15000
4. Control transfer	2	8000

15

(b) Discuss RISC and CISC instruction set architecture. 5

5. (a) What are the two types of linear pipeline? Discuss the working and space time diagram for linear pipeline. 10

(b) What is pipeline hazard? Write briefly about the various types of data and control hazards. 10

6. Write short notes on : 5×4=20

(a) Amdahl's law

(b) Flynn's classification

(c) Computer generation

(d) VLIW architecture.