Total number of printed pages–3

53 (IT 714) ACAR

2019

ADVANCED COMPUTER ARCHITECTURE

Paper : IT 714

Full Marks : 100

Time : Three hours

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

*Answer **any five** questions.*

1. (a) Explain the conventional machine architecture with neat diagram. Write the differences between sequential computer and parallel computer. 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) Discuss the classification of parallel computers with relevant diagram. 10

3. (a) A program is run on a 40MHz CPU. The different types of instruction and corresponding Clock cycle count is given in the table below.

Determine : 15

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

(i) Effective CPI
(ii) Execution time
(iii) MIPS rate for the program.

4. (a) Discuss the Flynn's classification and classification based on grain size of parallel computers. 10

(b) What is bus arbitration ? Explain various bus arbitration schemes with advantages and disadvantages for each. 10

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

(b) Discuss briefly about the various types of data and control hazards found in pipeline processing. 10

6. Write short notes on : 5×4=20

(a) Memory hierarchy

(b) Computer generation

(c) Amdahl's law

(d) VLIW architecture.

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