53 (IT 714) ACAR

2017

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 von Neumann's Architecture with diagram. Write differences between sequential computer and parallel computer. 5+5=10

   (b) What is Parallelism ? Explain various mechanisms use to achieve parallelism in an uniprocessor system. 10

2. *(a)* What are the Multiprocessor and Multicomputer systems ? Explain different types of Multiprocessor models with relevant diagram. 3+7=10

(b) Discuss the Flynn's classification for parallel computer using neat diagrams. 10

3. (a) A program is run on a 40*MHz* CPU with the instruction mix and corresponding clock cycle count as given in the table below. Determine : 10

(i) Effective CPI

(ii) Execution time

(iii) MIPS rate for the program.

Instruction type	Clock cycle count	Instruction count
1. Integer Arithmetic	1	45,000
2. Floating point	2	32,000
3. Data transfer	2	15,000
4. Control transfer	2	8,000

(b) Discuss RISC and CISC instruction set architecture. Give some advantages and disadvantages of VLIW. 6+4=10

4. (a) What is locality of reference ? Discuss *any three* page replacement algorithms. 4+6=10

(b) What is bus arbitration ? Explain different bus arbitration schemes. Give advantage and disadvantage for each. 2+8=10

5. (a) What are the *two* types of Linear Pipeline ? Discuss the working and space-time diagram for linear pipeline. 5+5=10

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

6. Write short notes on : ***(any four)*** 5×4=20

(i) Amdaul's Law

(ii) Multiprogramming and Time sharing

(iii) Levels of Parallelism

(iv) Instruction Pipeline

(v) Computer Generation.
