

M.E. First Semester (Computer Science & Information Technology) (New-CGS)

**13179 : Advance Computer Architecture : 1 RNME 1**

P. Pages : 2

Time : Three Hours



**AU - 3430**

Max. Marks : 80

- Notes :
1. Due credit will be given to neatness and adequate dimensions.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answer necessary with the help of neat sketches.
  4. Use of pen Black ink/refill only for writing the answer book.

1. a) Explain the role of compiler in computer performance. 7  
b) Describe the structure of a recent compiler. 7

**OR**

2. a) Explain the following. 8  
a) Amdahl's Law.  
b) Locality of Reference.

- b) How is flow control charge distinguished? Specify any two major methods for evaluating branch condition. How are conditions tested? 6

3. a) What is super pipelining? Explain the pipeline structure and performance of the MPS 400 processor family. 7  
b) Explain how branches affect pipelining performance? 6

**OR**

4. a) Give the limitations of delayed branch scheduling and explain how they arise? 7  
b) Explain how DLX pipeline can be extended to handle floating point operations? 6

5. a) Consider the loop: 6  
for (i = 1; i ≤ 100; i = i + 1)  
{  
    A[i] = A[i] + B[i]; /\* S1 \*/  
    B[i + 1] = C[i] + D[i]; /\* S2 \*/  
}

What are the dependences between S1 and S2? Is this loop parallel? If not, show how to make it parallel.

- b) Explain what is data dependencies in ILP. 7

**OR**

6. What is Dynamic scheduling? Explain it in brief with a scoreboard. 13
7. a) Differentiate between: 8
- i) Cache and virtual memory.
- ii) Static and Dynamic RAM.
- b) Explain the concept of segmented virtual memory. 6

OR

8. Explain various Cache Miss Penalty reduction techniques. 14
9. a) What are the different RAID levels and how do they solve the problems due to disk failures? 7
- b) Suppose a processor sends 10 disks I/O's per second, these requests are exponentially distributed and the average disk service time is 20 ms. What is the disk utilization? Calculate the average time spent in the queue and the average response time for a disk request, including the queuing time and disk service time. 6

OR

10. How is the performance of I/O measured? Explain Little's Law. 13
11. a) Differentiate between. 8
- i) Connection oriented communication and connectionless communication.
- ii) Packet switching and circuit switching.
- b) What is a protocol suite? Explain TCP/IP an internetworking standard. 5

OR

12. a) Differentiate between Massively parallel processor Network and Local Area Network. 5
- b) Explain the organization, Layers, packet format of ATM network. 8

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