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**B.Tech. 7th Semester Computer Science
Engineering–VIII Examination, December–2013**

ADVANCED COMPUTER ARCHITECTURE

Paper–CSE–401-F

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt five questions in total. Question 1 is compulsory. Attempt one question from each section.

1. (a) Define the terms command and machine. 20
- (b) Differentiate between horizontal and vertical instruction.
- (c) Differentiate between warm and cold cache.
- (d) What do you mean by hit ratio and miss rate ?
- (e) What is a memory module ?
- (f) What do you mean by closed queue ?
- (g) Name various run time scheduling techniques.
- (h) What do you mean by clustering ?

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[P.T.O.]

Section-A

2. (a) Differentiate between hardwired control and micro programmed control. 10
- (b) Assume a wafer has diameter of 0.30 m and costs 1000 for a particular production run. Compute the cost per die for die area = 1.5 cm^2 and for 0.035 m^2 if defect density = 0.8 defects/ cm^2 . 10
3. (a) Write a program in L/S, R/M architecture for addition of a constant value in all the elements of an array. 10
- (b) What is cycle quantization ? Find the effect of cycle quantization on pipelining. 10

Section-B

4. (a) Explain various cache write policies. 10
- (b) We have a two level cache with miss rate of 5% (L1) and 2% (L2). Suppose the miss in L1 and hit in L2 penalty is 3 cycle and miss penalty in both caches is 6 cycles. If a processor makes 1.4 references per instruction, Compute excess CPI due to cache misses. 10

5. Write notes on :

(a) Overlapping T cycle in virtual to real translation.

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(b) Explain full associative mapping scheme.

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Section-C

6. Explain Hellerman, Strecker and Rau's model in memory system design.

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7. Explain Flores and closed queue model.

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Section-D

8. (a) Explain various functional units of multiple issue machine.

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(b) Explain snoopy and directory based protocols.

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9. Write notes on :

(a) Comparison of vector processor and multiple issue machines.

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(b) Memory coherency in shared memory multiprocessor.

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