Total No. of Questions : 12]

SEAT No. :

P1759

[Total No. of Pages : 3

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B.E. (Electronics)

a - ADVANCED COMPUTER ARCHITECTURE

(2008 Pattern) (Semester - I) (Elective - II)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any 3 questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What are the performance metrics and measures used for parallel computers? Explain. **[8]**

b) Why do we need high speed computing? Explain von-newman computer architecture. **[8]**

c) Explain instruction level parallelism. **[2]**

OR

Q2) a) Explain in brief Feng's classification and Handler's classification for parallel computer architectures. **[8]**

b) State various applications of parallel processing. Explain the application of parallel processing in weather forecasting. **[8]**

c) What is cluster computing? **[2]**

Q3) a) What do you mean by EPIC? State and explain features of EPIC. **[8]**

b) Explain the following terms w.r.t. pipeline processor. **[8]**

i) Data buffering

ii) Job sequencing

iii) Collision prevention

iv) Internal Forwarding

OR

P.T.O.

Q4) a) Compare superscalar & VLIW processor. **[8]**

b) What are different pipelining Hazards? How can these hazards be detected and resolved. **[8]**

Q5) a) Explain pipeline chaining with example. **[8]**

b) Explain: **[8]**

i) Vector loops

ii) Any two vector optimizing Functions

OR

Q6) a) Explain bottlenecks of vector processing. **[8]**

b) Draw and explain computation section of Cray - I vector processor. **[8]**

SECTION - II

Q7) a) Discuss in detail static and dynamic topologies used in interconnection network. **[8]**

b) What is inter PE communication? Explain network design decisions for inter PE communications. **[10]**

OR

Q8) a) Write and explain a parallel algorithm for array processor to compute FFT? **[8]**

b) Explain cube interconnection network and hyper cube interconnection network. **[10]**

Q9) a) Explain in brief: **[8]**

i) Loosely coupled multiprocessors.

ii) Tightly coupled multiprocessors.

b) What is memory contention? Explain the arbitration techniques to resolve the issue of contention. **[8]**

OR

Q10)a) Write short note on inter process communication & synchronization. **[8]**

b) Explain in brief desirable processor characteristics for multiprocessor architecture. **[8]**

Q11)a) Explain in brief latency hiding techniques. **[8]**

b) Explain synchronous & asynchronous message passing in paralle programming. **[8]**

OR

Q12)a) Explain use of following primitives w.r.t. parallel programming. **[8]**

i) Send ( );

ii) Receive ( );

iii) Fork ( );

iv) Join ( );

b) What are the issues involved in multithreaded architecture? Explain. **[8]**