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[3464] - 342
B.E. (Computer)

DEC - 2008

ADVANCED COMPUTER ARCHITECTURE AND COMPUTING
(410249) (2003 Course)

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

Instructions to the candidates:-

1) *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section - I .*
   Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section - II.
2) *Answers to the two sections should be written in separate books.*
3) *Figures to the right indicate full marks.*
4) *Neat diagrams must be drawn wherever necessary.*
5) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Discuss in detail, how parallelism exploited in uniprocessor system. **[8]**

b) Explain the important Architectural features of Explicitly Parallel Instruction Computing (EPIC). **[8]**

OR

Q2) a) Discuss term scalability. Explain Amdahl's Law for speedup performance. **[8]**

b) Explain Feng's classification for parallel Computer Architecture. **[8]**

Q3) a) Discuss in detail classification of pipeline processors. **[10]**

b) What do you mean by Hazards? With neat diagram explain various types of data Hazards. **[8]**

OR

Q4) a) Discuss with suitable examples, the following techniques to resolve hazards with respect to pipelining processors. **[10]**

i) Trace scheduling.

ii) Software scheduling.

b) Discuss various features of superscalar Architecture with respect to pentium processor. **[8]**

P.T.O.

Q5) a) Discuss any one parallel sorting algorithm for Array processor. **[8]**

b) Discuss any one interconnection Network of SIMD organization & explain routing functions for the same. **[8]**

OR

Q6) a) What are issues involved with vector processing? State any two vector optimizing functions. **[8]**

b) What are different issues involved with respect to inter PE communication of SIMD processors. **[8]**

SECTION - II

Q7) a) Discuss desirable processor characteristics of multiprocessors. **[6]**

b) Explain significance of multiport memory to support Interprocessor Communication Network. **[6]**

c) What do you mean by cache coherency? Explain "write through" protocol for the same. **[6]**

OR

Q8) a) What do you mean by clusters? Explain significance of following: **[10]**

i) Chip Multiprocessing.

ii) Massively parallel processors.

b) Compare Loosely coupled and Tightly coupled multiprocessor systems. **[8]**

Q9) a) Discuss various multithreaded processor Architecture. **[8]**

b) With suitable examples, explain synchronous and asynchronous message passing with respect to multithreaded Architecture. **[8]**

OR

Q10) a) Explain the significance of : **[8]**

i) Latency Hiding Techniques.

ii) Principles of multithreading.

b) What are features of shared memory programming? With standard constructs-explain any one such language. **[8]**

Q11) a) What do you mean by parallel Algorithm? Give classification of same. What are different performance measures of parallel Algorithms? **[10]**

b) Write short note on Cluster computing. **[6]**

OR

Q12) a) What are typical features of multiprocessors operating systems. Explain significance of Message Passing Interfaces (MPI). **[10]**

b) Explain the features of control and data parallelism implemented in fortran go. **[6]**

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[3464]-343
B.E. (Computer)
SOFTWARE TESTING AND QUALITY ASSURANCE
(410450)

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

Instructions to the candidates:

1) *Answers to the two sections should be written in separate books.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*
5) *Your answers will be valued as a whole.*

SECTION - I

Q1) a) How you will determine what to measure? [8]

b) Explain major steps in planning formal experiment? [8]

OR

Q2) a) What is good Data & how to define it? [8]

b) Comment on Capability-maturity Assessment? [8]

Q3) a) Explain Object Oriented metrics in detail? [8]

b) Describe the difficulties with general "complexity measure". [8]

OR

Q4) a) Explain the term 'Morphology'. [4]

b) What is meant by 'Global modularity'. [4]

c) What you mean by software size? What are the different aspects of software size? [8]

Q5) a) Explain Developer/Tester support for Defect Repository. [6]

b) What you mean by coding defects? [4]

c) How to check defects in Test plan & test cases? [4]

d) What is GQM? [4]

OR

Q6) Write short notes on : [18]

a) Test case design for black box testing.

b) Test case design for white box testing.

c) Domain Testing.

d) Positive Testing.

P.T.O.

SECTION - II

Q7) a) Explain with example GUI testing? [8]

b) Explain what you mean by 'Test execution & Test reporting'? [8]

OR

Q8) Write short notes on : [16]

a) Software test automation.

b) Regression testing.

c) Integration testing.

d) Scenario testing.

Q9) Explain use of following : [16]

a) Scatter diagram.

b) Histogram.

c) Run charts.

d) Cause effective diagrams.

e) Checklists.

f) Pareto diagrams.

g) Control chart.

h) Process maturity models.

OR

*Q10)*a) Explain in detail Software configuration Management? [8]

b) Explain the in process quality metrics in detail. [8]

*Q11)*a) What did you understand by software maintenance? Explain different activities involved. [9]

b) What you mean by problem fixing? Explain process of problem fixing & reporting. [9]

OR

*Q12)*a) What is meant by fix distribution? Explain its use? Explain different methods for fixed distribution? [9]

b) Explain best practices for problem resolution for customer satisfaction. [9]

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[3464]-344

B.E. (Computer Engineering)

DISTRIBUTED SYSTEMS

(2003 Course) (410451)

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

Instructions to the candidates:

1) *Answer any three 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) *Figures to the right indicate full marks.*
5) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Give and explain six different characteristics of a Distributed System. [6]

b) Give and explain the different types of system models in a Distributed System. [6]

c) Compare Distributed Operating System and Network Operating System. [6]

OR

Q2) a) What are different client-server architectures? Explain it. [6]

b) Explain the role of middleware in distributed system. [6]

c) What are the different types of software and hardware concepts in a Distributed System? [6]

Q3) a) Explain the RPC mechanism in detail with the help of a diagram. [6]

b) Why are transport level communication services often inappropriate for building distributed applications? [4]

c) Assume a client calls an asynchronous RPC to a server, and subsequently waits until the server returns a result using another asynchronous RPC. Is this approach the same as letting the client execute a normal RPC? What if we replace the asynchronous RPCs with one way RPCs? [6]

OR

P.T.O.

Q4) a) Does it make sense to implement persistent asynchronous communication by means of RPCs? Explain it. [6]

b) Explain token bucket algorithm. [6]

c) Compare Message oriented communication with stream oriented communication. [4]

Q5) a) Explain the working of Plan 9 Distributed file system in detail. [6]

b) What is DNS? Describe the organization of the DNS name space. [6]

c) Explain file locking in NFS? [4]

OR

Q6) a) Explain file system operations supported by NFS. [8]

b) Explain how DNS can be used to implement a home-based approach to locating mobile users. [8]

SECTION - II

Q7) a) Explain how NTP (Network Time Protocol) is useful to distribute time information over the Internet, also state the features of NTP. [6]

b) Compare Ring and Bully algorithms with respect to the time complexities. [4]

c) Explain the difference between physical and logical clocks, also draw diagrams in support of the explanation. [6]

OR

Q8) a) Compare the centralized, distributed algorithms for mutual exclusion. [6]

b) Explain bully algorithm with a suitable example. [6]

c) Give the characteristics of a distributed transaction. [4]

Q9) a) Explain the recovery mechanism of a two-phase commit protocol. [6]

b) Explain the different characteristics of faults with respect to:-

Timing failures and Server crash failures. [6]

c) Explain in detail the approaches for masking failures. [6]

OR

Q10) a) Explain in detail how reliable group communication is achieved. [6]

b) Give the characteristics of a reliable client-server communication. [6]

c) Explain Byzantine generals problem with a suitable example. [6]

Q11) a) Draw and explain the architecture of CORBA. [8]

b) Explain the different types of GRIDs with examples. [4]

c) Explain different types of CLUSTERS with examples. [4]

OR

Q12) a) Write short notes on:- [8]

i) GRID computing.

ii) CLUSTER computing.

b) Explain the importance of CORBA IDL, CORBA RMI service and CORBA naming service. [8]

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[3464] - 345
B.E. (Computer & Information Technology) (Common)
SOFTWARE ARCHITECTURE
(410451) (2003 Course) (Elective - II)

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

Instructions to the candidates:-

1) *Figures to the right indicate full marks.*
2) *Answers to the two sections should be written in separate answer books.*
3) *From Section - I, Answer (Q1 OR Q2) and (Q3 OR Q4) and (Q5 OR Q6).*
4) *From Section - II, Answer (Q7 OR Q8) and (Q9 OR Q10) and (Q11 OR Q12).*
5) *Make suitable assumptions wherever relevant and appropriate.*

SECTION - I

Q1) a) What is the role of UML diagrams in software architecture **[4]**

b) Define the given term/concept and give examples **[8]**

i) Software architecture

ii) Stakeholders in architecture

c) Write short notes on Reference Models. **[6]**

OR

Q2) a) Explain with examples the concepts of information hiding, modules how do these concepts help architecturally. **[6]**

b) How do current trends in technology influence architectural decisions taken. **[6]**

c) Write short notes on component and connector structures. **[6]**

Q3) a) What is the relation between Testing and software quality? **[4]**

b) What is the relation between software architecture and Software quality? **[4]**

c) In your own words, Compare and contrast how Testing and software architecture contribute to software quality. **[4]**

d) Define and give example for "Testability" attribute. **[4]**

OR

P.T.O.

Q4) a) How does one specify with measures/metrics the quality attribute performance in an SRS. **[4]**

b) Explain in brief the following in context of quality attributes **[12]**

i) Voting tactic ii) Non Repudiation

iii) Artifact in scenario iv) Conceptual integrity.

Q5) a) Compare and contrast design pattern and software design. **[4]**

b) In implementing design patterns often inheritance and Composition is used, what do you understand by these terms related to objects/classes. **[6]**

c) Explain the FOLLOWING definition of design patterns with examples.

"A design pattern is a description of communicating objects and classes that are customized to solve a general design problem in a particular context". **[6]**

OR

Q6) a) Give the applications of abstract factory pattern. **[4]**

b) Give the structure diagram for FAÇADE pattern, explain with example the structure. **[4]**

c) What do you understand by virtual proxy pattern? **[4]**

d) What do you understand by behavioral patterns? **[4]**

SECTION - II

Q7) In brief write about the technology and its need **[16]**

a) JXTA

b) XML parsers in J2EE.

c) Java on client slide

d) JVM.

OR

Q8) a) Compare application servers and webservers. **[4]**

b) What is a stateless session bean, is a shopping cart for a user a good example for such a bean, justify your answer? **[4]**

c) How J2EE is an extension of java capabilities. **[4]**

d) What is a middleware, why do we need it. **[4]**

Q9) a) What are web applications, give examples of popular websites, which generic client is used to access most web applications, what do you understand by dynamic and interactive websites and how do you make a website dynamic and interactive. **[8]**

b) What is a 3 Tier application and what is the role of the data Tier, the third tier. How do following technologies play a role in the third tier? Namely Oracle and JDBC. **[8]**

OR

Q10) In brief explain the concept and give good examples to illustrate **[16]**

a) DHTML
b) Valid XML
c) Active X controls
d) JSP tags

Q11) a) Write short notes on DLLServers. **[6]**

b) Write short notes on .NET remoting. **[6]**

c) Write short notes on Web services. **[6]**

OR

Q12) a) Write function prototype for release ( ) method of IUnknown interface in Com and write C++ code to show the use of that method and explain its application. **[6]**

b) Compare .NET and J2EE. **[6]**

c) Write short notes on distributed objects. **[6]**

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[3464] - 347
B.E. (Computer)
HIGH PERFORMANCE NETWORKS
(410451) (2003 Course)

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

Instructions to the candidates:-

1) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section - I and Solve Q7 or Q8, Q9 or Q10, Q11 or Q12 from section - II.*
2) *Answers to the two sections should be written in separate books.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Figures to the right indicate full marks.*
5) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain the significance of Frame Bursting operation. Describe the process also. **[8]**

b) Differentiate between 10,100 and 1000mbps Ethernet based on MAC characteristics. **[8]**

OR

Q2) a) Comment on 1000 BASE-X Auto Negotiation. What are its limitations. **[8]**

b) Discuss in short about various 1000 BASE-X physical layer Characteristics. **[8]**

Q3) a) Define the terms FECN and BECN. What is their significance in congestion control? **[6]**

b) Draw the diagram of Functional groupings and reference points. Explain the functions of NT1, NT2 and TA. **[6]**

c) Describe the use and significance of DLCI. **[6]**

OR

Q4) a) Draw and explain in short SS7 protocol architecture. **[6]**

b) Differentiate between frame relay and ATM (At least 6 points). **[6]**

c) Comment on North American Digital hierarchy (DS). Specify the data rates Supported along with the number of voice channels supported. **[6]**

Q5) a) Describe the various ATM source traffic descriptors. **[8]**

b) What is AAL? What are the different types supported? Comment on AAL5 along with the suitable application support. **[8]**

OR

Q6) a) What are the functions supported by Transmission Convergence (TC) sub layer? Draw the diagram of Cell Delineation process. **[8]**

b) Comment on B-ISDN Transmission structure? What are the 2 methods of transferring ATM cells using this structure. **[8]**

SECTION - II

Q7) a) Why are some variations of xDSL Asymmetric? **[4]**

b) Define the terms HDSL and RADSL respectively. **[4]**

c) What does a POTS splitter do and where it is used? **[8]**

OR

Q8) a) Draw and Explain A typical ADSL equipment configuration. **[8]**

b) Explain the QAM process in detail. How it is related to XDSL technology? **[8]**

Q9) a) Explain the working and significance of RSVP. **[8]**

b) Describe in short Expedited forwarding and Assured forwarding concepts. **[8]**

OR

Q10) a) Describe the working of MPLS? What are its overall advantages? **[8]**

b) Draw and explain the label structure used in MPLS explain the significance of value 0. **[8]**

*Q11)*a) Describe the term Spread Spectrum. What is its advantage? Elaborate the Concept used for 802.11 b standard. **[10]**

b) Why WIFi standard can not use CSMA/ CD protocol? What is the solution Adopted. Explain. **[8]**

OR

*Q12)*a) Comment on the overall advantage of Wimax over WIFi. What kind of Applications are supported by WiMax. **[6]**

b) Comment on various characteristics of 802.16 and 802.16a respectively. **[6]**

c) Explain the following terms related to WiMax Technology: **[6]**

i) Fixed Wireless Access (FWA).

ii) Mobile Wireless Access (MWA).

iii) Nomadic Wireless Access (NWA).