



- Q3) a) Draw a neat diagram to depict 'Availability' general scenarios. How does one measure availability (formula). In brief write about the availability tactic 'Transactions' as a fault prevention tactic. [8]
- b) In brief write about tactics (i) Maintaining existing interfaces (ii) Introducing concurrency. [8]

OR

- Q4) Explain and illustrate the following concepts (in context of quality attribute) with examples, in brief. [16]
- a) Maintaining data confidentiality.
- b) Quality attribute scenario.
- c) Performance bottlenecks.
- d) Non functional requirements.

- Q5) a) For the design pattern OBSERVER give the following: [8]
- i) Motivation / problem.
- ii) Solution that is the actual pattern.
- iii) Example.
- iv) Structure of classes involved.
- b) Do you agree or disagree with the statement. Design patterns cannot be invented' and also Justify your answer. [4]
- c) In brief state what are (i) Frameworks, (ii) MVC patterns. [4]

OR

- Q6) a) What can a Mediator pattern do for us, illustrate with an example. [4]
- b) Which design pattern will you choose to "Ensure a single instance of a class in memory for the application", How can one achieve/implement this in C++. [6]
- c) Write short notes on Design pattern 'PROXY'. [6]

## SECTION - II

- Q7) a) What is the role of following J2EE technologies: Servlets, JSP, compare the two for web development. [6]
- b) What is the advantage of having your application be developed from components like say EJB's. What are the services that a EJB container offer to beans. [6]
- c) Compare developing applications directly at sockets level vs. Say by using a technology like JAVA RMI. [6]



**B.E. (Information Technology)**

**SOFTWARE TESTING & QUALITY ASSURANCE**

**(2003 Course) (414444)**

*Time : 3 Hours]*

*[Max. Marks :100*

*Instructions to candidates :*

- 1) *Answer THREE questions from each section.*
- 2) *Answers to the two sections must be written on separate answer books.*
- 3) *Assume suitable data if necessary.*
- 4) *Draw sketches wherever necessary.*
- 5) *Figures to the right indicate full marks.*

**SECTION - I**

**Q1) a) Define the following terms: [8]**

- |             |                      |
|-------------|----------------------|
| i) Faults   | ii) Test Bed         |
| iii) Errors | iv) Software Quality |

**b) Differentiate software verification and software validation. [8]**

**OR**

**Q2) a) Explain testing verses debugging. Differentiate unit testing verses integration testing. [8]**

**b) What are different levels of testing? Which software components are most suitable for unit testing and why? [8]**

**Q3) a) Describe software defect life cycle. [8]**

**b) Explain in details different functions (responsibilities) to be handled in a testing life cycle or process. [8]**

**OR**

**Q4) a) Explain unit test planning in details. [8]**

**b) Explain the software defect prevention process. [8]**

**Q5) a) Explain with examples following in-process quality metrics. [9]**

- i) Defect removal effectiveness.
- ii) Defect arrival pattern during machine testing.

**b) Explain different types of measurement scales with examples. [9]**

OR

- Q6) a) Define measurement and explain in details the representation condition for measurement. [9]
- b) Explain the importance of the metric - *percentage delinquent fixes* in the context with software maintenance. [9]

**SECTION - II**

- Q7) a) How is software usability measured? Describe the different usability testing methods. [8]
- b) Explain with an example the cause effect diagram to analyze a software defect. [8]

OR

- Q8) a) What are the different components of costs, for quality software? Explain in details. [8]
- b) Compare: [8]
- i) Quality control and Quality Assurance.
- ii) Prevention cost of quality and appraisal cost of quality.

- Q9) a) Explain with example the six sigma measure of software quality. [8]
- b) Explain the KPA's of CMM level 4. [8]

OR

- Q10) a) How does the ISO 9000/9001 standard ensure in producing a good quality software? [8]
- b) Explain the software project tracking & oversight (SPTO) KPA of the CMM level 2. [8]

Q11) Write short notes on (any three): [18]

- a) Software security testing.
- b) Types of network testing.
- c) Use of state machines in OO testing.
- d) Code review.
- e) Recovery testing.

Instructions to candidates :

- 1) Answer 3 questions from Section I and 3 questions from Section II.
- 2) Answers to the two sections should be written in separate books.
- 3) Neat diagrams must be drawn wherever necessary.

SECTION - I

Q1) a) Explain various access methods used in wireless communication systems. [8]

b) Explain the 3-tier architecture of the mobile computing. [8]

OR

Q2) a) Explain various international standard bodies used in wireless communication systems. [8]

b) Describe what do you understand by Wireless PAN, Wireless LAN & Wireless MAN? [8]

Q3) a) Explain the GSM architecture in detail. [8]

b) Explain security issues used in GSM? [8]

OR

Q4) a) Explain features & architecture of SMS. [8]

b) Write short note on: [8]

i) RFID.

ii) Mobile IP.

Q5) a) Explain spread spectrum technology. Where and how it is used. [8]

b) Write a detail note on MMS. [10]

OR

- Q6) a) Explain GPRS transmission plane protocol architecture. [8]  
b) Explain WAP protocol stack in brief. [5]  
c) Explain WAE logical model in brief. [5]

**SECTION - II**

- Q7) a) Explain the advantages and disadvantages of WLAN? [8]  
b) Explain with an example how an intelligent network (IN) works. [8]

OR

- Q8) a) Explain the SS#7 signalling system in detail. [8]  
b) Explain various limitation of handheld devices. [8]

- Q9) a) Explain the kernel features used in Palm OS? [8]  
b) Explain the three basic components of Symbian OS? [8]

OR

- Q10)a) Explain how J2ME is different than J2SE or J2EE? [8]  
b) Explain various communication mechanisms available on Palm OS?[8]

- Q11)a) What are the basic differences in functionality between H.323 and SIP?[8]  
b) Explain various flavors available in Windows CE. [10]

OR

- Q12)a) Explain symmetric key and asymmetric key encryption technique used in mobile devices? [8]  
b) Write short note on: [10]  
i) VOIP.  
ii) Attacks on mobile devices.



Total No. of Questions : 12]

[Total No. of Pages : 2

P1278

[3364]-655

May-June 2008

B.E. (I.T)

SYSTEM OPERATIONS & MAINTENANCE

(414448) (2003 Course)

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates :

- 1) Answer 3 questions from Section I and 3 questions 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) Your answers will be valued as a whole.
- 6) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 7) Assume suitable data, if necessary.

SECTION - I

- Q1) a) Classify Telecommunication service providers. [6]  
b) With a neat diagram explain service delivery cycle. [10]

OR

- Q2) a) List principal support process. With a neat diagram explain the same. [10]  
b) Describe the organizational structure of an average telecommunications provider. [6]

- Q3) a) What is 'Telecommunication Management Network.' With a neat diagram explain the functions within the TMN architecture. [8]  
b) Explain:-  
i) Types of virtual circuits. ii) Switching technologies.  
iii) Multiplexing technologies. [8]

OR

- Q4) a) What is directory enabled networking. [5]  
b) What is MPLS.  
Give an operational example of MPLS. [6]  
c) Write a note on LDAP. [5]

- Q5) a) Explain in detail the problem handling process with a neat diagram. [6]  
b) What are the different market segments. [6]  
c) List the considerations to be accounted for designing a vibrant website. [6]

P.T.O.

OR

- Q6) a) List the service - independent and service dependent metrics of SLA. [3]  
b) What is SLA. Give its significance. [6]  
c) Can SS-7 protocol be used for fraud management. If yes how? If not why? [3]  
d) What are Mediation solutions. [6]

**SECTION - II**

- Q7) a) With a neat diagram explain service creation, planning and development process. [8]  
b) Write a note on IP-based VPNs. [8]  
c) What is MSPP. [2]

OR

- Q8) a) With a neat diagram explain security management process. [8]  
b) Write a note on Public Key Infrastructure. [8]  
c) Draw diagram of 'Firewall architecture'. [2]

- Q9) a) What is content driven traffic management. [6]  
b) What is content - smart QOS. [5]  
c) What is Load distribution and balancing. [5]

OR

- Q10) a) With a diagram explain the architecture of management framework. [8]  
b) Explain the Typical OSS structure. [8]

- Q11) a) Compare and contrast Building teams and Keeping teams. [6]  
b) Write notes on- [10]  
i) Workflow management.  
ii) Knowledge management.

OR

- Q12) a) What are items included while providing Job profiles. [5]  
b) Give the significance of document management and list the important technologies which assist to do the same. [5]  
c) What is bench - marking. Explain. [6]



**DISTRIBUTED SYSTEMS**

(414449) (2003 Course)

Time : 3 Hours]

[Max. Marks :100

Instructions to candidates :

- 1) Both sections are compulsory.
- 2) Make suitable assumptions, if required.
- 3) Figures to the right indicate full marks.

**SECTION - I**

- Q1) a) Explain the issue of transparency in distributed systems. [8]  
b) What are mobile codes and mobile agents? Explain with the help of examples. [6]  
c) Define distributed systems. [2]

OR

- Q2) a) Differentiate between Network Operating Systems and Distributed Operating Systems. [6]  
b) Explain different Fundamental models. [10]

- Q3) a) What is LRPC and doors? [5]  
b) How is Message-oriented communication classified? [12]

OR

- Q4) a) Explain different components in Events and Notifications. [5]  
b) Write a note on DCE remote objects. [8]  
c) How are distributed objects classified? [4]

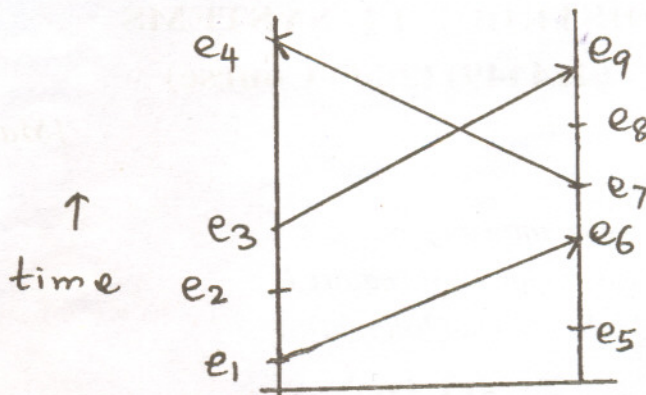
- Q5) a) What is path-name translation and mounting in NFS? [4]  
b) How does CODA handle constant data availability? [8]  
c) With a neat diagram, explain xFS architecture. [5]

OR

- Q6) a) Write a note on:  
1) Plan 9. [6]  
2) Security in CODA. [6]  
3) Semantics of file sharing. [5]

## SECTION - II

- Q7) a) Add a message-sending event to the space and diagram shown below that is concurrent to events e5, e6 and e7. [5]



- b) Add a non-message sending event in the above diagram that is concurrent to events e1, e2 and e3. [5]  
c) Describe Election algorithms. [8]

OR

- Q8) a) Describe Ricart-Agrawala's (Distributed Mutual Exclusion) algorithm. [6]  
b) Explain nested transactions. [6]  
c) What is drift rate and clock skew? [6]

- Q9) a) What are orphan calls? How are they handled? [6]  
b) Explain Basic Reliable Multicasting. How it could be made scalable? [10]

OR

- Q10) a) Explain Byzantine Generals Problem. Why do we need to have  $3m + 1$  total processes for system to work correctly, assuming non-faulty commander? [10]  
b) Explain checkpointing. [6]

- Q11) a) Write a note on CORBA? [10]  
b) Differentiate between Distributed Systems and Grid Computing. [6]

OR

- Q12) a) What are the services offered by CORBA? [8]  
b) Write a note on Grid Computing. [8]



P1247

[3364]-657

MAY-JUNE 2008

**B.E. (Information Technology)**  
**INFORMATION RETRIEVAL (410450)**  
**(2003 Course)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) Answer Three questions from section I and Three questions from section II.
- 2) Answers to the two sections should be written in separate answer books.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right indicate full marks.

**SECTION - I**

- Q1) a) Explain [9]
- i) Classification and query specification w.r.t Data and Information Retrieval.
  - ii) Resolving power of significant words by Luhn.
  - iii) Index term weighting.
- b) Explain Graph theoretic approach for clustering and draw the cluster derived from the given similarity matrix. [9]

Threshold value 0.43

1					
2	0.7				
3	0.8	0.9			
4	0.4	0.6	0.9		
5	0.3	0.5	0.8	0.8	
	1	2	3	4	5

Explain string, connected component, maximal complete subgraph.

OR

- Q2) a) Explain steps involved in normalization. [3]
- b) Explain in detail contribution of Sparck Jones and Salton & Yang to index the document and apply weight for efficient retrieval. [8]
- c) Describe the various classification methods based on the relations between properties, classes and object. [7]

- Q3) a)** Elaborate on the language for describing file structures. [8]  
b) Explain XML data model and evaluation of queries. [8]

OR

- Q4) a)** Explain with an example organization of records in Multi-lists, state its advantage over inverted files. Explain in detail cellular multi-lists. [10]  
b) Describe the Boolean & vector Model. [6]
- Q5) a)** Consider a Set Of Relevant Documents to query  $q \{d_1, d_3, d_5, d_2, d_4, d_6, d_{12}, d_{24}, d_{36}, d_{48}\}$  A new retrieval algorithm returns the following answer set  $\{d_{48}, d_{41}, d_6, d_{61}, d_{67}, d_5, d_{511}, d_{54}, d_{57}, d_2, d_{28}, d_{21}, d_{250}, d_{211}, d_1\}$  evaluate retrieval performance of the algorithm. [8]  
b) Explain the term [8]  
i) Document Surrogates  
ii) KWIC  
iii) Post Coordinate or Quorum level ranking  
iv) Faceted Query

OR

- Q6) a)** Explain [8]  
i) TREC Collection  
ii) User Oriented Measure  
b) Explain how graphical approaches for query specification are more effective in terms of accuracy and speed compared to command-line syntax. [8]

## SECTION - II

- Q7) a)** Discuss the five key abstractions used to design or model Digital Libraries. [10]  
b) Write brief note on MARC Record. [6]

OR

- Q8) a)** Discuss the architectural issues in Digital Libraries. [10]  
b) Write brief note on OPACs. [6]
- Q9) a)** What is Multimedia IR? Discuss steps on which of data retrieval relies. [8]

b) Discuss the query predicates of multimedia query language. [8]

OR

**Q10)**a) How is image analysis and image access accomplished in MULTOS? [8]

b) Note on

i) SQL query language

ii) Generic multimedia indexing [8]

**Q11)**a) Compare parallel and distributed IR. [8]

b) Explain the centralized crawler-indexer and distributed architecture of a search Engine. [10]

OR

**Q12)**a) Note on : [6]

i) Suffix Arrays

ii) Query Processing

b) Discuss challenges involved in web search. [6]

c) Explain performance measures of parallel computing. [6]