

N.B. a) Questions No. 1 is compulsory.

b) Attempt any four questions out of remaining six questions.

1. a) What are the characteristics of good user interface design? [5]  
b) Give guidelines for designing effective error messages. [5]  
c) Explain different types of windows. [5]  
d) Compare different menu structures. [5]
2. a) Explain in detail about the following techniques determining requirements.  
Categorize them as direct or indirect method.  
i) Traditional focus group      ii) Competitor Analysis  
iii) Card Sorting                  iv) System Testing. [10]  
b) What are the possible uses of colors and problems associated with it? Give the  
Guidelines for choosing background and foreground color for web page. [10]
3. a) Explain the general principles of User Interface Design. [10]  
b) Explain important human characteristics that need to be considered in UI design. [10]
4. a) Compare the GUI and Web page design. [10]  
b) Design the user interface for online picnic planner. It should allow user to select  
the picnic spot - depending on distance, type(hill, sea,..), number of people, transport,  
food ..etc. Assume suitable data and draw interface. [10]
5. a) Explain with example the qualities of visually pleasing composition [10]  
b) Describe the characteristics and capabilities of two direct and two indirect device  
Based controls. Give the guidelines for selecting proper device based control. [10]
6. a) Explain different techniques for grouping and ordering of data [10]  
b) Describe various selection and presentation controls. [10]
7. Write short note on any two of the following : [20]  
i) Interface Building Tools  
ii) Types of Statistical Graphs  
iii) Designing for visually impaired  
iv) User Interface Design Process.

7/6/2011

B.E. (MPN VIII) (Rev)  
Distributed Computing

159-mk-1st-II-11.

Con. 3726-11.

(REVISED COURSE)

RK-4659

(3 Hours)

[ Total Marks : 100

**N.B.** (1) Question No. 1 is **compulsory**.

(2) Attempt any **four** questions out of remaining questions.

(3) Draw **neat** diagrams wherever **required**.

1. (a) What are the desirable features of an Open Distributed Systems ? 5  
(b) Differentiate between Process and Threads using proper examples. 5  
(c) Compare DOS and NOS as platforms for Distributed Systems. 10
2. (a) What are the parameter passing-semantics of RPC ? 5  
(b) What makes a RPC complicated ? Discuss the protocols for handling some of the complicated RPCs. 5  
(c) Discuss the different methods available for ensuring ordered message delivery ? 10  
Name the protocols which implement these methods.
3. (a) What are the issues in designing Load Balancing algorithms ? 10  
(b) Explain the different distributed physical clock synchronization algorithms with their relative advantages and disadvantages. 10
4. (a) What are the criteria to be considered for choosing the block size while designing a DSM ? Explain the different replacement strategies of migrating or replicating the blocks from the cache. 10  
(b) What is the notion of a Context in a name space ? Explain the different clustering and context binding strategies of names. 10
5. (a) Describe the different approaches for deadlock detection in DS. 10  
(b) What do you mean by a Consistency Model ? Explain the available consistency models and the requirements of the systems which support them. 10
6. (a) What are the probable failures in the message passing form of IPC ? With neat diagrams explain the reliable IPC protocols. 10  
(b) Describe the different models for organizing threads. Explain the working of a multi-threaded server. 10
7. Write short notes on (any two) :— 20
  - (a) Lightweight RPC
  - (b) Process Migration in Heterogeneous systems
  - (c) Stateful and Stateless File Servers
  - (d) Ricart Agrawala Algorithm-merits and Demerits.

- N.B. :** (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** questions out of remaining **six** questions.

1. Answer the following questions in short : (any **four**) 20
  - (a) Explain the concept of Public Key Infrastructure (PKI).
  - (b) Discuss Voice Over IP (VOIP).
  - (c) What are the desirable features of web service and explain its architecture ?
  - (d) What is Resource Syndication ? Give its uses.
  - (e) Explain the role of AJAX in web applications with example.
2. (a) Discuss various client side and server side vulnerabilities. 10  
(b) Explain the concept of cloud computing and discuss the categories of cloud services. 10
3. (a) Explain REST architecture and give its design constraints. 10  
(b) Describe Virtual Private Network (VPN) and state its usefulness in various industries. 10
4. (a) How does DHCP (Dynamic Host Configuration Protocol) work ? Explain its packet format. 10  
(b) Describe "Virtualization" in cloud computing technology. 10
5. (a) Explain the working principle of Search Engine. 10  
(b) Explain Service Oriented Architecture (SOA) with its Life Cycle. 10
6. (a) What are the two port numbers used for an FTP client and server communication ? Explain with suitable diagram. 10  
(b) Write short notes on the following :— 10
  - (i) Amazon s3
  - (ii) Security issues in cloud.
7. (a) What is Resource Oriented Architecture (ROA) ? Explain its different features / Properties. 10  
(b) Explain IPv6. (Internet Protocol version 6) 10

Con. 3188-11.

(REVISED COURSE)

RK-4656

( 3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** questions out of remaining **six** questions.  
(3) Assume **suitable** data if **necessary**.

1. (a) Compare and contrast TIFF file format and RIFF file format. 10  
(b) You are appointed as a consultant to set up a Multimedia Laboratory in an engineering institute. Give specifications of components, configuration, connectivity, software etc. along with the assumptions. 10
2. (a) Describe the CCITT group 3 standard. How does CCITT group 4 differ from CCITT group 3 ? 10  
(b) Explain JPEG compression in detail. 10
3. (a) Explain chroma sub-sampling. 5  
(b) What is HDTV standard ? 5  
(c) Explain different motion vector search techniques. 10
4. (a) Explain MPEG 1 compression in detail 10  
(b) What are components of distributed multimedia system ? 10
5. (a) Explain MIDI standard with regard to MIDI messages and MIDI data format. 10  
(b) Consider RTP session consisting of 4 users, all of which are sending and receiving RTP packets into the same multicast address. Total bandwidth is 400 kbps.  
(i) RTCP will limit its traffic at what rate ?  
(ii) A particular receiver will be allocated how much RTCP bandwidth ?  
(iii) A particular sender will be allocated how much RTCP bandwidth ? 10
6. (a) One of the most important application using both technologies networks and multimedia is distance learning. You are appointed as a consultant to design the system for such an application. Specify the hardware and software requirements for the same if this application is to be used in distributed environment. 10  
(b) Explain working of image scanner and hence explain reasons for use of CCD by these scanners. 10
7. Write short notes on (any **two**) :— 20
  - (a) Human factors and design considerations related to virtual reality
  - (b) Audio Compression
  - (c) Multimedia authoring.

- N. B. :** (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** questions from the remaining.

1. (a) Differentiate between prescriptive architecture and descriptive architecture with an example. 5
- (b) What do you mean by architectural degradation ? Explain architectural drift and architectural erosion. 5
- (c) Define the following terms :— 6
  - (i) Component
  - (ii) Connector
  - (iii) View and viewpoint.
- (d) Who are system stakeholders ? How they influence the systems architecture ? 4
2. (a) Draw the architecture of a compiler which takes the source code in HLL, follows different phases and converts it to object code. (Using any of the **two** styles) :— 10
  - (i) Pipes and filters
  - (ii) Layered architecture
  - (iii) Blackboard style.
- (b) Describe the roles played by a connector. State the variation dimensions of the following connector types :— 10
  - (i) Event connector
  - (ii) Arbitrator connector.
3. (a) What do you mean by stakeholder driven modelling ? Explain in detail. 5
- (b) What is the difference between accuracy and precision in context of architectural modelling ? 4
- (c) Compare the features of two modelling languages Darwin and Rapide. 6
- (d) Explain the 4 + 1 view in UML. 5

4. (a) What are the goals of analysis ? Explain each goal in detail. 6  
(b) What do you mean by ATAM ? Explain with a diagram. 5  
(c) What role does architectural analysis play in case of the following stakeholders :— 4  
    (i) Developers  
    (ii) Managers.  
(d) Explain simulation based analysis. 5
5. (a) What is mapping problem in implementation ? Differentiate between one-way and round trip mapping. 8  
(b) What are different criterias for evaluating implementation frameworks ? 6  
(c) How are deployment and mobility related to and different from one another ? 6
6. (a) Explain REST with a diagram. 6  
(b) What do you mean by service oriented architecture ? How they are used in webservices ? 4  
(c) What is domain specific software architecture ? Give a overview of DSSA process. 6  
(d) Define product line architecture. 4
7. (a) Define the following NFP's (any **two**) :— 6  
    (i) Efficiency  
    (ii) Complexity  
    (iii) Adaptability.  
(b) What are different dimensions of dependability ? 4  
(c) Write a short note on CORBA. 6  
(d) What do you mean by C2 style of architecture ? 4
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