

# M.Tech. Computer 2015 Sem - I to III

SENEGAL - I (2015 COURSE) (CBCS): WINTER - 2016  
SUBJECT : ADVANCED DATABASE MANAGEMENT SYSTEM

Day : Tuesday  
Date : 13-12-2016

Time : 11.00 A.M. To 2.00 P.M.  
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.

## SECTION - I

Q.1 Explain in detail the Query Optimization for parallel query evaluation. [10]

OR

Discuss in detail the following with respect to distributed database:

- a) Distributed Data Storage
- b) Concurrency Control

Q.2 Explain in detail the architecture of Web Search Engine. [10]

OR

Explain the creation and working of Inverted Index in web search engine.

Q.3 What is Data Warehouse? Discuss the architecture and major components of a Data Warehouse. [10]

OR

Discuss the process of Knowledge Discovery. State the different techniques used for Data Mining. Explain using example the Classification technique

## SECTION - II

Q.4 Compare object Oriented Data Modeling and Conceptual Data Modeling. Explain with example how object-oriented concepts are implemented in object database system. [10]

OR

What is XML and how does XML compare to SGML and HTML? Explain the Querying and Transformation of XML data.

Q.5 What is the use of Spatial Database? Explain in detail the types of Spatial Data and Spatial Queries using example. [10]

OR

What is High Command Indexing? Explain in detail indexing based on space filling curves.

Q.6 What are Recursive Queries? Explain in detail the Recursive Queries using negation. [10]

OR

Explain in brief Transaction Management in Multi-Database.

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**SENEGAL-I (CBCS – 2015 COURSE) : WINTER - 2016**  
**SUBJECT : ADVANCED SOFTWARE ENGINEERING**

Day : Thursday  
Date : 15.12.2016

Time : 11.00 A.M. TO 2.00 P.M.  
Max. Marks : 60.

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Both the sections should be written in **SEPARATE** answer books.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.
- 5) Assume suitable data, if necessary.

**SECTION-I**

**Q.1** Discuss SDLC model that will be most suitable to develop airline reservation system software. Describe this model with various phases in detail. What are its applications? **(10)**

**OR**

Describe SDLC model that can be mostly used to develop digital library system software. Discuss this model with various phases in detail. State its pros and cons. **(10)**

**Q.2** Develop SRS for Inventory control system of a multinational company in IEEE format. **(10)**

**OR**

Write down any four test cases to test software for search engine with black box testing method. Apply test case design approach for any two test cases for the same with test scenario. **(10)**

**Q.3** Write short notes on following ... **(10)**

- a) Release management
- b) CASE tools for change management

**OR**

Write short notes on following ... **(10)**

- a) Process verification
- b) System building in SPI

**SECTION-II**

**Q.4** Describe User Interface design with at least 4 user interfaces for the development of video rental application for video parlor. Apply software design rules properly. **(10)**

**OR**

Design User Interfaces for development of MIS system for any SME company with at least 4 user interfaces for the transaction managements. Use proper software design rules as per the need. **(10)**

**Q.5** With component based software design approach, develop OO system for ATM banking system. Develop necessary UML diagrams to support the design of this system. **(10)**

**OR**

Autonomous robots system is a chain of interconnected robots used to assemble cars in production line of a factory. Apply component based software design approach to develop robot management system for the same. Trace various objects, classes, relationships and components necessary to build this software in CBSD approach and represent them with proper diagrams. **(10)**

**Q.6** Write short notes on following ... **(10)**

- a) FTR
- b) Software reliability

**OR**

Write short notes on following ... **(10)**

- a) ISO 9126
- b) Mc call's quality factors

**SENEGAL – I (CBCS – 2015 COURSE): WINTER - 2016**  
**SUBJECT: MOBILE OPERATING SYSTEM**

Day : Saturday  
Date : 17.12.2016

Time; 11.00 A.M. TO 2.00 P.M.  
Max. Marks: 60

**N. B.:**

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**SECTION - I**

- Q. 1**
- a) Define Mobile Operating System. Explain the main facilities provided by Mobile Operating System. (05)
  - b) Explain when you would prefer time sharing processing instead of batch processing? (05)

**OR**

- a) Discuss the limitations or disadvantages of operating system 'WINDOWS' and 'LINUX' from point of multi level view of operating system. (05)
  - b) Explain the differences among processes, programs and threads. List the basic possible states for a process. Discuss any additional state. Is it possible to have intermediate states? (05)
- Q. 2**
- a) Is multi-programming more useful in a multi-user system or a single user system? Discuss your arguments. (05)
  - b) A system has several processes that request I/O services in long time intervals compared with very short CPU service. For example the process request services that take about 95 % of the total service request time are I/O request and only 5 % are CPU requests. What potential problems can this system exhibit? Explain. (05)

**OR**

- a) Define virtual memory. What memory management difficulties would be involved in allowing two operating systems to run concurrently? How might these difficulties be addressed. (05)
  - b) Describe the effects of a corrupted data block for a given file for  
i) Contiguous ii) Linked iii) Indexed (05)
- Q. 3**
- a) Explain the three components of the security with an example. Can the Trojan horse attack work in a system protected by capabilities? (05)
  - b) Enlist and describe the behavior of Malicious software programs. (05)

**OR**

- a) What are the types of Intruders? Define Intrusion Detection System. Compare anomaly intrusion detection and signature intrusion detection. (05)
- b) List and briefly describe some of the defenses against buffer overflows that can be implemented when running existing vulnerable programs. (05)

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**SENEGAL – I (CBCS – 2015 COURSE): WINTER - 2016**  
**SUBJECT: DISTRIBUTED COMPUTING**

Day : Tuesday  
Date : 20-12-2016

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**SECTION – I**

**Q.1** Concurrency transparency is a desirable goal for distributed system? Do centralized systems have this property automatically? Explain. **(10)**

**OR**

Why are distributed operating systems more difficult to design than operating systems for development? **(10)**

**Q.2** Discuss blocking and non-blocking types of IPC. Which is easier to implement and why? Discuss their relative advantages and disadvantages. **(10)**

**OR**

Discuss in detail the term "IPC in mach". **(10)**

**Q.3** Differentiate between stateful and stateless servers. Why do some distributed applications use stateless servers in spite of the fact that stateful servers provide an easier programming paradigm and are typically more efficient than stateless servers? **(10)**

**OR**

Discuss in detail the term "Remote procedure call in SUN RPC". **(10)**

**SECTION – II**

**Q.4** Differentiate between internal synchronization and external synchronization of clocks in a distributed system. External synchronized clocks are also internally synchronized, but the converse is not true. Explain why? **(10)**

**OR**

Discuss in detail the Lamport algorithm and compare its performance and reliability with that of Ricart and Agrawala's algorithm. **(10)**

**Q.5** List the main differences and similarities between threads and processes. **(10)**

**OR**

What are the main issues in handling signals in a multithreaded environment? Describe a method for handling each of these issues. **(10)**

**Q.6** Discuss in detail the emerging trends in Distributed Computing. **(10)**

**OR**

What is false sharing? When is it likely to occur? Can this problem be completely eliminated? What other problems may occur if one tries to completely eliminate the false sharing problem? **(10)**

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