

(Rev)

Con. 3503-10.

(REVISED COURSE)

AN-4603

(3 Hours)

[Total Marks : 100]

Database technologies.

- N.B.: (1) Questions No.1 is compulsory.
 (2) Solve any four questions out of remaining six.
 (3) Assume any suitable data wherever required but justify the same.

- Q.1 Consider the following information about a Life Insurance Corporation:
 The Newark divisional office of the Life Insurance Corporation of America keeps all the necessary information about the policy holders in a database. A policy holder pays a premium until the maturity of the policy or his death, at which time the sum assured and bonus is paid to the nominee. The premium to be paid is worked out based on the age of the person proposed and the term of the policy. Newark division keeps the following information about each policy holder: social security number, name, address, date of birth, description of the terms of the policy and the annual premium. The corporation has divided its Newark division into 15 zones for its convenience. Each zone has its manager. Every zone has a number of agents allotted, typically ranging from 10 to 20. Every agent must procure a minimum of 10 customers.
- (a) Draw an E-R diagram for the Corporation database (state any assumptions you believe you need to make in order to develop a complete diagram). Identify the key attribute (attributes) for each entity and the cardinality of each entity relationship. [10]
- (b) Write SQL statement to create corresponding relation and capture as of the constraints as possible. If you cannot capture some constraints, explain why? [10]
- Q.2 (a) Explain ACID properties in detail? [10]
 (b) Explain 3NF and 4NF with suitable example? [10]
- Q.3 (a) What is deadlock? Explain the different method to prevent and detected it? [10]
 (b) What is difference persistent and transient object? How the persistence handle typical OODBMS? [10]
- Q4 (a) How is a vertical and a horizontal partitioning of a relation is specified? How can a relation be put back together from a complete vertical and a complete horizontal partitioning? [10]
 (b) Explain relational algebra operators in details? [10]
- Q.5 (a) Explain the reference integrity with example? [10]
 (b) Explain concurrency control in DBMS with help ant two protocols? [10]
- Q.6 (a) Explain database system structure in detail? [10]
 (b) Explain the architecture of datawarehouse in detail. [10]
- Q.7 Short notes on (any four) [20]
 a) Comparison of OODBMS ORDBMS
 b) OLAP
 c) Temporal database
 d) Mobile database
 e) Trigger and Assertion.

Database Systems.
(OLD COURSE)

Con. 3546-10.

AN-4843

(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 any **suitable** data wherever **required** but justify the **same**.

1. Construct the SQL queries for the following relational database :— 20
 employee (*employee-name*, street, city)
 works (*employee-name*, company-name, salary)
 company (*company-name*, city)
 manager (*employee-name*, manager-name)
 The queries are :—
 (a) Find the names, street addresses and cities of residence of all employees who work for SBI bank and earn more than 50,000 Rs.
 (b) Find all employees in the database who live in the same cities and on the same streets as do their managers.
 (c) Find all employees in the database who earn more than each employee of ICICI bank.
 (d) Find the company that has most employees.
 (e) Find those companies whose employees earn a higher salary, on averages than the average salary at SBI.
2. (a) Including all features of EE-R diagram design EE-R model for a university database system. 12
 (b) List the ACID properties and explain the usefulness of each. 8
3. (a) Consider the following relation :— 10
 Ratable (*custid*, *Itemid*, Cust-name, actno, Itemname, Unit Price, Class, Qtypurchase, Net price)
 Convert the above relation in 2-NF and 3 NF.
 (b) Explain concept of referential integrity with an example. 10
4. (a) Explain deadlock handling in database system. 10
 (b) Explain Immediate database modification and checkpoints. 10
5. (a) How would you test whether given schedule S is conflict serializable and view serializable ? 10
 (b) What is the difference between persistent and transient objects ? How persistence can be handled in object oriented system ? 10
6. (a) Draw and explain database system architecture. 10
 (b) Explain security and authorization in SQL. 10
7. Write short notes (any **four**) :— 20
 (a) View
 (b) Trigger
 (c) ORDBMS, OODBMS and RDBMS
 (d) SQL3
 (e) Shadow Paging.

Con. 3623-10.

(REVISED COURSE)

software Engineering.
AN-4592

(3 Hours)

[Total Marks : 100

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

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

(3) All questions carry equal marks.

(4) Figure to the right indicate full marks.

- | | |
|---|----|
| 1. (a) Discuss the different types of cost estimation model. | 10 |
| (b) Explain in detail the Incremental model with advantage and disadvantages. | 10 |
| 2. (a) What are the different tasks of Software Configuration Management (SCM) ? Discuss each in brief. | 10 |
| (b) What is quality assurance ? Explain various levels of quality assurance in Software Engineering. | 10 |
| 3. (a) Explain the fundamental software design concepts. | 10 |
| (b) What are the advantages of Object Oriented Software Engineering. | 10 |
| 4. (a) Explain Basis path testing and cyclomatic complexity in detail. | 10 |
| (b) Discuss and compare coupling and cohesion in brief. | 10 |
| 5. (a) Explain Black Box testing and White Box Testing. | 10 |
| (b) What are the various version control activities ? Explain. | 10 |
| 6. (a) Explain various techniques in software requirement analysis. | 10 |
| (b) Explain path testing and cyclomatic complexity in detail. | 10 |
| 7. Write notes on any two :- | 20 |
| (a) Empirical Estimation Model | |
| (b) Re-engineering | |
| (c) Software Requirements Specification | |
| (d) Software Project Planning. | |
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Con. 3656-10.

(OLD COURSE)

AN-4852

(3 Hours)

[Total Marks : 100

Software Engineering.

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

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|---|--------------------------------|---|----|
| 1 | (a) | Explain in detail the incremental model with advantages and disadvantages. | 10 |
| | (b) | Explain how size-oriented metrics differ from function-oriented metrics. Discuss the pros and cons of each. | 10 |
| 2 | (a) | Explain how project scheduling and tracking is done for a software development project | 10 |
| | (b) | Explain COCOMO Model in detail | 10 |
| 3 | (a) | Explain various testing strategies. | 10 |
| | (b) | Explain the fundamental software Design concepts. | 10 |
| 4 | (a) | Define SCM. What is configuration audit? Explain change management | 10 |
| | (b) | Explain Data Flow Diagram in detail | 10 |
| 5 | (a) | Explain risk identification, risk projection, RMMM plan in detail | 10 |
| | (b) | What is Quality Assurance? What are different parameters of quality? | 10 |
| 6 | (a) | What are different types of maintenance? Give examples of each. | 10 |
| | (b) | What is feasibility study? Explain its type, contents and purpose | 10 |
| 7 | Write Short note on. (any two) | | 20 |
| | (a) | Architectural design | |
| | (b) | Software Requirement Specification | |
| | (c) | Reengineering | |
| | (d) | CMM and Key Process Areas | |
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Information and Network Security

43 : 1st half. 10-AM(k)

Con. 3495-10.

(REVISED COURSE)

AN-4588

(3 Hours)

[Total Marks : 100

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

1. (a) What are the key principles of security ? Explain with example ? 5
 (b) Compare secret key and public key encryption ? 5
 (c) Distinguish among Vulnerability, threat and control. 5
 (d) List three controls that could be applied to detect or prevent salami attacks ? 5
 2. (a) Compare AES and DES. Comment on Double and Triple DES ? 10
 (b) What is Digital signature ? Explain in brief ? 10
 3. (a) Explain Denial of Service attack in networks. 10
 (b) List and explain various malicious and non-malicious codes with examples. 10
 4. (a) What is Firewall ? Describe the types of firewalls with their limitations ? 10
 (b) Describe the types of IDSs and their limitations ? Why we need hybrid IDSs ? 10
 5. (a) Explain the use of temporal, physical and logical separation for security in Computing environment ? 10
 (b) What are the various forms of protection that operating system applies at the file level. 10
 6. (a) What is the term Risk Analysis ? Explain in detail the steps in Risk analysis ? 10
 (b) Explain Secure-Email system with example. 10
 7. Write short notes on any three of the following :— 20
 - (a) Kerberos System
 - (b) RSA Algorithm
 - (c) Hash functions
 - (d) ARP Spoofing.
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Con. 3929-10.

(3 Hours)

[Total Marks : 100

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

(2) Attempt any four questions out of remaining six question.

(3) Assume any suitable data wherever necessary and justify the same.

1. (a) Prove or disprove that the following systems are linear, Time-Invariant: 8

(1) $T\{x(n)\} = e^{x(n)}$

(2) $T\{x(n)\} = n[x(n)]^2$

(b) Find the impulse response of the following casual system. 8

(1) $y(n) - Y(n-1) = x(n) + x(n+1)$

(2) $y(n) - 2\cos\theta y(n-1) + y(n-2) = x(n)$

(c) Determine the stability of the system 4

$$y(n) - \frac{5}{2}y(n-1) + y(n-2) = x(n) - x(n-1)$$

2. (a) Find the z-transforms of the sequences 10

(1) $2^n \sin(n\pi/4)u(n)$

(2) $2^n u(n-2)$

(b) Find $H(z)$ for the system 10

$$y(n] + 3y(n-1) + 2y(n-2) = x(n) - x(n-1)$$

3. (a) Find $f(n)$, a casual sequence, if $F(z)$ is given by following: 10

$$F(z) = \frac{1 - 4z^{-1} - 11z^{-2}}{1 + 2z^{-1} - 5z^{-2} - 6z^{-3}}$$

(b) Prove the convolution and correlation properties of the z-transform using only its definition. 10

4. (a) Obtain a direct-form realization for the following system: 10

$$y(n] + \frac{3}{4}y(n-1) + \frac{1}{8}y(n-2) = x(n) + x(n-1)$$

(b) Obtain a cascade realization of 10

$$H(z) = \frac{2 + z^{-1} + z^{-2}}{(1 + \frac{1}{2}z^{-1})(1 - \frac{1}{4}z^{-1})(1 + \frac{1}{8}z^{-1})}$$

[TURN OVER

5. (a) Obtain an analog Chebyshev-filter transfer function that satisfies the constraints 10

$$1/2^{1/2} \leq |H_a(j\Omega)| \leq 1 \quad 0 \leq \Omega \leq 2$$

$$|H_a(j\Omega)| \leq 0.1 \quad \Omega \geq 4$$

- (b) Use impulse invariance to obtain $H(z)$ if $T = 1$ s and $H_a(s)$ is 10

(1) $\frac{1}{s^2 + s + 1}$

(2) $\frac{1}{(s+1)^2}$

6. (a) Find DFT of the following sequence using DIT-FFT. 10

$$x(n) = \{2, 1, -2, 0, 4, -3, 1\}$$

- (b) Explain in detail with suitable diagram "Zero Locations of Linear-Phase FIR Systems" 10

7. Write short notes on :- 20

- (a) The Gibbs Phenomenon.
- (b) Inverse Z Transform.
- (c) Hilbert Transform.
- (d) DSP Processors.

Con. 3905-10.

(3 Hours)

[Total Marks : 100

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

(2) Answer any four questions out of remaining six questions.

(3) Assume suitable data if required.

1. (a) What is a business model ? What are the major pressures in the business environment ? 10
- (b) Identify several major themes that describe the impact of information technology on individuals, organizations and societies. 10
2. (a) What are interorganizational information systems (IOS). Give its types and technologies. 10
- (b) Discuss the steps in building a high level conceptual data model. 10
3. (a) Describe the ways in which WiMax is affecting the use of cellular phones for m-commerce. 8
- (b) With the help of neat labeled diagram explain the structure of E-Commerce. 12
4. (a) What is L-commerce ? Discuss the technologies used in providing 1-commerce services. 10
- (b) Explain in detail the different Production and Operation Management (POM) areas. 10
5. (a) Describe the process and practice approach to knowledge management. 10
- (b) With the help of neat labeled diagram explain Business Intelligence (BI) components and its architecture. 10
6. (a) Explain the Decision Support Systems (DSS) process in detail. 10
- (b) What is Supply Chain Management ? What is the need of SCM ? Explain working and advantages of SCM. 10
7. Write short note on (any two) :— 20
 - (a) Information System Vulnerabilities and Threats
 - (b) Transaction Processing System (TPS)
 - (c) Executive Support Systems (ESS)
 - (d) Data Warehouse and Data Management.

Con. 3742-10.

(REVISED COURSE)

AN-4600

(3 Hours)

[Total Marks : 100

Midelle ware & Enterprise IT.

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

1. A. Explain CORBA IDL. Write a program for CORBA IDL and server class to calculate interest:
Input parameters- principal amount, rate and no. of yrs.
Output parameter- interest value. 10
- B. Compare RMI, CORBA and DCOM. 10
2. A. Explain the structure of WSDL document and its constituent elements with a diagram. 10
- B. Elaborately explain the .NET framework remoting architecture with a labeled diagram. 10
3. A. Illustrate and describe the different components of EJB framework. 10
- B. Compare POA and BOA in CORBA. 10
4. A. Describe SOAP messages. How are they processed? 10
- B. Differentiate javabeans and enterprise javabeans. 10
5. A. Mention and explain the different features of distributed computing environment. 10
- B. What is a Web service? Explain the different types of web services. 10

[TURN OVER

Con. 3742-AN-4600-10.

2

6. A. `<?xml version="1.0"?>` 10
`<monitor type="LED" modelNo="m0010">`
`<size>24</size>`
`<ratio>16:9</ratio>`
`<launchDate>2009-09-10</launchDate>`
`<feature>100% sRGB colorspace Pivot highcontrast</feature>`
`<price>7000</price>`
`</monitor>`
`<monitor type="LCD" modelNo="m0101">`
`<size>20</size>`
`<ratio>16:10</ratio>`
`<launchDate>2008-09-10</launchDate>`
`<feature>Tilt, Swivel, Pivot, height adjustment</feature>`
`<price>200.5</price>`
`</monitor>`
- Create XML schema monitors.xsd for the above XML document. Each monitor has a unique modelNo and up to 3 features. The value of the attribute type can only be "LED", "LCD" or "CRT".
- B. Explain with neat labeled diagram the working of connection oriented protocol using sockets. 10
7. Write short notes on: (Any two):— 20
- .NET architecture
 - CORBA services
 - DCOM apartments
 - Differentiate Remote Procedure Method and Message Oriented Messaging.

systems software & operating system

Con. 3730-10.

(OLD COURSE)

AN-4846

(3 Hours)

[Total Marks : 100

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

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

(3) Figures to the right indicate full marks.

1. (a) What is system software? How it differs from application software? Give example of system software and explain its advantages to the user. 10
 - (b) Define macro. What is macro call and macro expansion? 10
 2. (a) Explain and compare different page replacement algorithm. 10
 - (b) What is a scheduler? Describe short term, mid term and long term scheduling when the schedulers are involved. 10
 3. (a) Explain the working of two pass assembler with neat flow charts and description of various databases used. 10
 - (b) Explain code optimization phase of a compiler. 10
 4. (a) What are semaphores? What are different types of semaphores? How can they be implemented? 10
 - (b) Explain different disk space allocation methods with their advantages and disadvantages. 10
 5. (a) Explain file system and deadlock handling in UNIX 10
 - (b) What are the conditions that cause deadlock? Explain the deadlock prevention and deadlock avoidance. 10
 6. (a) What is the need of virtual memory? Explain with the neat diagram the translation of virtual address into physical address in a paging / segmentation system. 10
 - (b) Explain the file organization and the access methods. 10
 7. Write notes on: (any four) 20
 - i) Cross compiler.
 - ii) Interprocess communication.
 - iii) System calls and driver.
 - iv) Debug monitor.
 - v) Dynamic linking.
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object oriented Analysis Design
(OLD COURSE) AN-4747
(3 Hours) [Total Marks : 100

- N.B. (1) Question No. 1 is compulsory.
(2) Attempt any four questions out of remaining
(3) Figures supporting answers should be neat and clean.
(4) Assume suitable data if necessary and justify the same.

1. Solve any four :- 20
 - (a) What is a lifetime of an object? How can you extend the lifetime of an object?
 - (b) What is the difference between Object's method and an Object identifier?
 - (c) Identify the attribute of a dishwasher object.
 - (d) What is UML? What is the importance of UML?
 - (e) What is the purpose of activity diagram?

2. (a) "College has three departments. Students pay the fees and enroll into the various departments in the college. For each department, specific labs are assigned. Each lab has equipments pertaining to the department. Professors, teach the students in the college. Staff is of three types. Professors, Lab assistants and Non-teaching staff. Each professor teaches only one subject. Students may or may not stay in the hostel. Staff can stay in hostel. College prepares results, conducts exams and distributes results to the students. Each lab has a Lab assistant assigned to it. Roll numbers are assigned to the students."
Draw the class diagram, use case diagram, functional model and draw a state transition diagram for "student and staff". 20

3. (a) Develop a sequence/collaboration diagram for the "deposit checking" use case of bank. 10
(b) Explain different types of coupling and cohesion. 10

4. (a) Describe the macro and micro process of view layer design. 10
(b) Explain system testing and different types of system testing. 10

5. (a) What is static modelling? Explain different steps that are performed in constructing a static model. 10
(b) What are swim lanes? Explain with example. 10

6. (a) You are appointed as a consultant for the intranet development of your college. Write detailed statement of the problem. Construct a Component diagram and Deployment diagram for the same. 10
(b) Name and explain 5 Booch diagrams. 10

7. (a) Explain verification and validation testing. 10
(b) Explain the steps in constructing a functional model. 10

Con. 3919-10.

Internet (OLD COURSE)
(3 Hours)

AN-4855

[Total Marks : 100]

N.B.:

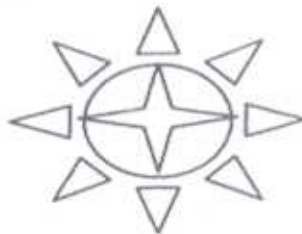
- 1 Question No. 1 is compulsory.
 - 2 Attempt any four out of remaining six questions.
1. (a) Discuss the software and hardware issues in internetworking. How does router work and discuss issues involved in routing. 10
 - (b) Explain different types and issues involved in dynamic web pages. 10
 2. (a) Draw and explain Telnet system. 10
 - (b) What are cookies? Write Javascript code to illustrate use of cookies in Web application. 10
 3. (a) Draw the block diagram showing how emails are sent and received indicating ports, protocols and interfacing components. 10
 - (b) What are hidden variables? How are they useful in session management? 10
 4. (a) Explain with example RSA algorithm. 10
 - (b) Explain life cycle of JSP. Give advantages of JSP over ASP 10
 5. (a) Explain DNS with neat diagram. 10
 - (b) What is socket programming? Define TCP and UDP socket, try opening a socket on a server and communicate with that from a client socket. 10
 6. (a) Explain the EDI process and list the advantages and disadvantages. 10
 - (b) What are the various online payment methods /mechanisms? 10
 7. Write short note (any four) :- 20
 - (a) Digital signature
 - (b) FTP
 - (c) ActiveX
 - (d) DTD of XML Document
 - (e) MIME
 - (f) Ecommerce architecture.
-

(3 Hours)

[Total Marks : 100

- N.B.** (1) Question No. 1 is **compulsory**.
 (2) Answer any **four** out of the **remaining** questions.
 (3) Attempt **all** sub questions one below the other.

1. (a) Write a note on Structure of Web Applications. 10
 (b) Explain the states in life cycle of midlet. 10
2. (a) Write a note on servlet lifecycle. 10
 (b) Describe model-2 architecture and state its advantages. 10
3. (a) Write a MIDP application to draw following image as mutable image :— 15



- (b) Write a note on Image class, also state the types of images that can be included on canvas. 5
4. (a) What is event handling ? Elaborate the types of event handling in J2ME. 10
 (b) Design a login form which accepts the user name and password and display success/failure Through alerts. 10
5. Write a note on the following :— 20
 (a) Obfuscator
 (b) GameCanvas
 (c) CDLC 1-0 and 1-1
 (d) Bluetooth.
6. (a) What are the frameworks supported by JEE5 ? 10
 (b) Write a note on Web Centric approach and EJB centric approach of creating web applications. 10
7. (a) Compare an applet with a midlet. 5
 (b) Explain the implementation of CommandListener and ItemStateListener with an example. 10
 (c) Explain the MVC architecture. 5
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T.E. Com & Information technology
SEM VI
object oriented Analysis
and Design.

1st-half-AGJ-10 (a) 11

Con. 3534-10.

(OLD COURSE)

AN-4747

(3 Hours)

[Total Marks : 100

- N.B.** (1) Question No. 1 is compulsory.
(2) Attempt any four questions out of remaining.
(3) Figures supporting answers should be neat and clean.
(4) Assume suitable data if necessary and justify the same.

1. Solve any four –

20

- What is a lifetime of an object? How can you extend the lifetime of an object?
- What is the difference between Object's method and an Object identifier?
- Identify the attribute of a dishwasher object.
- What is UML? What is the importance of UML?
- What is the purpose of activity diagram?

2. (a) "College has three departments. Students pay the fees and enroll into the various departments in the college. For each department, specific labs are assigned. Each lab has equipments pertaining to the department. Professors, teach the students in the college. Staff is of three types: Professors, Lab assistants and Non-teaching staff. Each professor teaches only one subject. Students may or may not stay in the hostel. Staff can stay in hostel. College prepares results, conducts exams and distributes results to the students. Each lab has a Lab assistant assigned to it. Roll numbers are assigned to the students."
Draw the class diagram, use case diagram, functional model and draw a state transition diagram for "student and staff".

20

- Develop a sequence/collaboration diagram for the "deposit checking" use case of bank. 10
- Explain different types of coupling and cohesion. 10
- (a) Describe the macro and micro process of view layer design. 10
(b) Explain system testing and different types of system testing. 10
- (a) What is static modelling? Explain different steps that are performed in constructing a static model. 10
(b) What are swim lanes? Explain with example. 10
- (a) You are appointed as a consultant for the intranet development of your college. Write detailed statement of the problem. Construct a Component diagram and Deployment diagram for the same. 10
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- (a) Explain verification and validation testing. 10
(b) Explain the steps in constructing a functional model. 10