

TIME - 3 Hrs

Marks – 100

Note:

1. Question 1 is compulsory.
2. Answer any 4 out of the remaining questions.

Q.1 a) Among the fundamental challenges in Information security are confidentiality, integrity, and availability (CIA). Give an example where Confidentiality is required, but not integrity. Give an example where integrity is required, but not confidentiality. Give an example where availability is the overriding concern. (5)

b) Encrypt the message "We are all together" using a double transposition cipher with 4 rows and 4 columns, using the row permutation

(1,2,3,4) -----> (2,4,1,3)

And the column permutation

(1,2,3,4) ---->(3,1,2,4)

(5)

c) What is the difference between authentication and non-repudiation? (5)

d) Why is it a good idea to hash passwords that are stored in a file? What is a "salt" and why should a salt be used whenever passwords are hashed? (5)

Q.2a) Explain key generation, encryption and decryption in the RSA algorithm (10)

b) Identify security issues due to protocol weakness in following protocols (10)

1) CSMA/CD

3) Ethernet with MTU 1500

Q.3 a) Explain Birthday Problem? Suppose hash function generates 12 bit output. If you hash 2^{10} randomly selected messages, how many collisions would you expect to find? (10)

b) Explain Kerberos operation in detail (10)

Q.4 a) Explain key generation, encryption and decryption in the RSA algorithm (10)

b) Explain following Attacks (10)

1) Buffer overflow attack 2) Salami Attack

Q.5 a) What are the three aspects of a 3-factor authentication (05)

b) What are the possible attacks on the password, Explain each in detail ? (05)

c) What is Access Control? How it is different from Availability? (05)

d) Write a note on firewall (05)

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- Q.6 a) What is primary advantage of SSL over IPsec? What is primary advantage of IPsec over SSL? (05)
- b) 'Strength of DES depends on the S-boxes in DES'- Comment on the statement (05)
- c) Write a note on CAPTCHA (05)
- d) What is the difference between Digital signature and Digital Certificate (05)

Q.7 Write a short note on

(5 X 4 = 20)

- a) Session Hijacking
- b) Risk Analysis
- c) Web Server Vulnerability
- d) Honey pot



subj: DBT.

QP Code: MV-18148

(3 Hours)

[Total Marks : 100

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

1. (a) Consider the following relations :— 15
- student (*id*, name, dept_name, tot_cred)
 course (*course id*, time, dept_name, credits)
 department (*dept_name*, building, budget)
 instructor (*id*, name, dept_name, salary)
 advisor (*s_id*, *i_id*)
 Preq (*course_id*, *preq_id*)
 section (*course_id*, *sec_id*, semester, year, building, room_no, time slot_id)
 classroom (*building*, *room_no*, capacity)
 timeslot (*timeslot_id*, day, start_time, end_time)
 takes (*id*, *course_id*, *sec_id*, semester, year, grade)
 teaches (*id*, *course_id*, *sec_id*, semester, year)
- Write the following queries on above relations :
- (i) Find the names of all instructors from Computer Science department.
 (ii) Find the course, id and titles of all courses taught by an instructor name shrinirasan
 (iii) Find the total capacity of each of the building in the University.
 (iv) Find the courses which are offered in both even and odd semester.
 (v) Find the names of instructors who have taught at least one course in even semester 2012.
- (b) Explain type constructors in OODB. 5
2. (a) Consider the relation R (A, B, C, D, E, F, G, H, I, J) and the functional dependencies 10
- $\{A, B\} \longrightarrow C$, $A \longrightarrow \{D, E\}$, $B \longrightarrow F$, $F \longrightarrow \{G, H\}$,
 $D \longrightarrow \{I, J\}$, $G \longrightarrow B$
- (i) Determine all candidate keys of R.
 (ii) If R is not in 2NF decompose it into 2 NF.
 (iii) If the relations in part (ii) above are not in 3NF decompose them into 3NF relations.
- (b) Explain ascertain constraints and trigger constraints. 10
3. (a) While working as database analyst for a national sales organization, you are asked to be 10
- part of its datawarehouse teams. Prepare high level summary of main requirements to evaluate DBMS products for data warehousing.
 The project group is ready to make a final decision between ROLAP and MOLAP.
 What should be the basis for this decision ? Why ?

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- (b) Explain the following operations with example :— 10
- (i) Bulk loading
 - (ii) Bulk scanning
 - (iii) Join
 - (iv) Sorting.
4. (a) Consider a Bharat Airline booking system and let us assume that following schema. 10
 customer (cust_id, title, fname, lname, gender, age, address, mobile_no, email)
 flight (flight_no, dept_date, dept_time, arrival_date, arrival_time)
 seat (flight_no, cust_id, dept_date, seat_no, class)
 Ticket (serial_no, flight_no, dept_date, seat_no, cust_id)
 Explain the different types of transparencies in distributed database with respect to above schema.
- (b) What are the most relevant differences between operational and decision support data and explain. 10
5. (a) Consider the cricket database 10
 Match (match_id, team1, team2, ground, date, winner)
 Player (Player_id, lname, fname, country, yborn, bplace, and test)
 Batting (match_id, pid, noovers, maidens, nruns, nwickets)
 Write the persistent objects and write the following OQL queries :—
 (i) Find the fname, lname, about object player from India.
 (ii) Find the playerid. of players who have made a century in each of ODI matches 2755 and 2689.
 (iii) Find matchid of all matches in the database in which Tendulkar is batted.
- (b) Consider a cricket database in Q5a. suppose that data is distributed amongst the node in England, West Indies, Australia and India. Describe how will you fragment, replicate and distribute the data. 10
6. (a) What is temporal database ? Explain different types of temporal databases. 10
 (b) Difference between OLAP and OLTP. 5
 (c) Steps for mapping EER schema into relational model. 5
7. (a) Write the ODL schema for University database. 10
 (b) Explain mobile database. 5
 (c) Explain ETL process in data warehousing. 5

SE
Software Engineering

QP Code :MV-18185

(3 Hours)

[Total Marks :100

- N.B.** (1) Question no. 1 is compulsory.
 (2) Attempt any four questions from the remaining six questions.
 (3) Assume suitable data if necessary.

1. (a) Consider the following 'C' function named 5
`int compute_gcd (int x, int y)`
`{`
`while (x != y)`
`{`
`if (x > y) then`
`x = x - y;`
`else y = y - x;`
`}`
`return x;`
`}`
- Determine the cyclomatic complexity of the above problem and list different linearly independent paths using control flow graph.
- (b) Compare waterfall model and spiral model 5
 (c) What is Agility ? Describe Extreme programming process ? 5
 (d) What do you understand by process maturity ? 5
2. (a) Prepare software requirement specification (SRS) for course management system. 10
 (b) Draw DFD (Level 0, 1 and 2) for above mentioned project, and explain. 10
3. (a) Which life cycle model would you follow for developing following project and why. 10
 (i) Library management system
 (ii) Web application.
 (b) List three common types of risks that a typical software project might suffer from. 10
 Give the RMMM plan for the same.
4. (a) Describe the activities of project scheduling and tracking. 10
 (b) What is quality assurance ? Discuss various levels of quality assurance in software engineering. 10

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5. (a) What is baseline in the content of software configuration management ? Describe how version control and change control are carried out during SCM ? 10
(b) What are the main advantages of using an object-oriented approach to software design over a function oriented approach ? 10
6. (a) Explain the user interface design process. 10
(b) Explain the term unit testing integration testing. Also compare top-down and bottom-up testing. 10
7. Write short note on any two :- 20
(a) Service-oriented software engineering
(b) Reverse engineering
(c) Empirical estimation techniques
(d) Test driven development.



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T.E. (I.T.), Sem. VIth

05/06/2014

PMRC

QP Code : MV-18269

(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) Differentiate between J2ME, J2EE and J2SE. 5
(b) State the need of JAD file, manifest file, jar file in J2ME environment 5
(c) Differentiate between Canvas and CustomItem. 5
(d) Create a MIDP application to display warning and info alert while performing bank withdrawal operation on an account. 5

- 2 (a) In a company the salary structure is based upon the category and basic pay. The Employee table has following fields: Employee ID, First name, Last name, Employee category (an integer 1, 2, 3 or 4). The salary consists of following components Dearness Allowance, House Rent Allowance, Other Allowance, Vehicle Allowance. Write HTML document to query the database for the total salary of an employee. The form will ask user to enter Employee Id and when clicks the submit button "find total salary" request must be submitted to Servlet. Servlet must access the database. Write a program to find the total salary of employee and display it in the browser. 10
(b) What are JDBC drivers? Describe each type in short. 10

- 3 (a) Explain EJB Centric and Web Centric approach of building Web application. 10
(b) Create MIDP application to display Calculator performing operation like add, subtract, multiply and divide. All above operation has to be created as a EXCLUSIVE list. 10

- 4 (a) Differentiate between configuration and profile. Explain J2ME profile. 10
(b) Explain MIDlet life cycle. State the need of an Obfuscator 10

- 5 (a) Write a MIDP application to show the use of passing key code to gameAction() to receive game action for the values UP, DOWN, LEFT, RIGHT and FIRE. 10
(b) Write a MIDP application to show rising sun using Canvas class. 10

- 6 (a) What is MIDlet suite? How security is handled in MIDlet suite? 10
(b) Explain low level and high level event handling and its type in J2ME. 10

- 7 Write short note on following 20
i) Container and Components in J2EE ii) JavaMail
iii) CustomItem iv) paint and repaint method.

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