CODE No.: 20BT73701 SVEC-20

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthauramu)

IV B. Tech I Semester (SVEC-20) Regular Examinations

DATABASE AND WEB SECURITY

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I						
1.	a)	Explain the concept of Database Application Security Models.	7 Marks	L2	CO1	PO1
	b)	Describe the roles of End Users, Database Administrators (DBAs), Application Developers, and Power Users in database security.	7 Marks	L4	CO1	PO2
(OR)						
2.	a)	Explain how RBAC is implemented and its advantages in a database security context.	7 Marks	L1	CO1	PO1
	b)	What are Data Warehousing Applications, and what are the specific security concerns associated with them?	7 Marks	L4	CO1	PO2
UNIT-II						
3.	a)	Explain the importance of database security in a DBMS and how it protects sensitive data.	7 Marks	L3	CO2	PO2
	b)	What are the various database application security models, and how do they protect database systems?	7 Marks	L4	CO2	PO2
(OR)						
4.	a)	What are the key differences between logical design and conceptual design in database security?	7 Marks	L4	CO2	PO2
	b)	Explain how auditing and monitoring contribute to the security of a database management system.	7 Marks	L2	CO2	PO2
UNIT-III						
5.	a)	Explain the architecture of DML action auditing. How does it help in tracking data changes in an application?	7 Marks	L4	CO3	PO5
	b)	Describe how DDL triggers can be created in Oracle to monitor database schema changes. Provide an example.	7 Marks	L4	CO3	PO2
(OR)						
6.	a)	Discuss the advantages and disadvantages of using triggers for data auditing in databases like Oracle and SQL Server.	7 Marks	L2	CO3	PO1
	b)	What is the importance of auditing database activities in terms of compliance and security?	7 Marks	L2	CO3	PO1
UNIT-IV						
7.	a)	Explain the web security problem and its key challenges.	7 Marks	L4	CO4	PO1
	b)	What are the major cryptographic systems used in web security?	7 Marks	L2	CO4	PO4
(OR)						
8.	a)	Explain how digital signatures work and their importance in web security.	7 Marks	L2	CO4	PO1
	b)	Explain the use of HTTPS in securing web communication.	7 Marks	L1	CO4	PO2
UNIT-V						
9.	a)	What are the implications of data breaches for web privacy?	7 Marks	L2	CO5	PO1
	b)	Explain different techniques used to track user behaviour on the web.	7 Marks	L4	CO5	PO2
(OR)						
10.	a)	How can cross-site scripting (XSS) attacks affect web privacy and what preventive measures can be taken?	7 Marks	L2	CO5	PO3
	b)	What is intrusion detection, and how can it be implemented for web server security?	7 Marks	L4	CO5	PO2

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		UNIT-I				
1.	a)	Discuss the importance of these models in ensuring data security within a database environment.	7 Marks	L2	CO1	PO1
	b)	Compare and contrast Discretionary Access Control (DAC) and Mandatory Access Control (MAC).	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the Bell-LaPadula model and its application in enforcing data confidentiality	7 Marks	L3	CO1	PO2
	b)	Explain the Chinese Wall Model and its application in preventing conflicts of interest.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Describe the different types of users in a DBMS and how access control mechanisms can vary between them.	7 Marks	L2	CO2	PO1
	b)	Discuss the concept of Virtual Private Databases (VPD) and how they enhance database security.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	What are the primary functions of a DBMS in terms of data storage, retrieval, manipulation, and security?	7 Marks	L2	CO2	PO1
	b)	Discuss how physical design in database security impacts database performance and security.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	What is a DML statement audit trail, and how can it be implemented in a database? Provide examples	7 Marks	L4	CO3	PO2
	b)	Describe how auditing of application-level errors is implemented in a database system. How does Oracle manage this auditing?	7 Marks	L4	CO3	PO2
		(OR)				
6.	a)	What is fine-grained auditing in Oracle, and how can it be customized for specific database events? Provide examples.	7 Marks	L4	CO3	PO2
	b)	Discuss the process of implementing fine-grained auditing in Oracle to track specific SQL operations.	7 Marks	L3	CO3	PO2
		UNIT-IV				
7.	a)	What is risk analysis in the context of web security, and why is it important?	7 Marks	L2	CO4	PO1
	b)	What are the legal restrictions on cryptography in various countries?	7 Marks	L2	CO4	PO5
		(OR)				
8.	a)	Discuss the importance of two-factor authentication in enhancing web security	7 Marks	L2	CO4	PO4
	b)	Explain the concept of data integrity and how cryptographic methods ensure it.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Explain the key elements of ensuring Web Server Security.	7 Marks	L2	CO5	PO3
	b)	What are the common vulnerabilities in web servers, and how can they be mitigated?	7 Marks	L2	CO5	PO3
		(OR)				
10.	a)	Discuss the OWASP Top 10 vulnerabilities and how they impact web privacy and security.	7 Marks	L4	CO5	PO3
	b)	Describe how encryption plays a role in maintaining web privacy.	7 Marks	L1	CO5	PO3

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Answer One Question from each Unit

All questions carry equal marks

		UNIT-I				
1.	a)	Describe the concept of Virtual Private Database (VPD) and how it enhances database security.	7 Marks	L4	CO1	PO1
	b)	How do advancements in microprocessor technology drive innovation in complex systems design?	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the basic working of VPD in an Oracle environment.	7 Marks	L2	CO1	PO1
	b)	Explain the different types of Oracle VPD policies (Dynamic, Static, Shared Static, etc.).	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Describe the steps involved in implementing row and column-level security in SQL Server.	7 Marks	L4	CO2	PO2
	b)	Discuss the role of Role-Based Access Control (RBAC) in securing databases.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Describe the importance of data masking and how it is applied in non-production environments.	7 Marks	L3	CO2	PO2
	b)	What is column-level encryption, and how is it used to protect sensitive data in a database?	7 Marks	L1	CO2	PO1
		UNIT-III				
5.	a)	Explain the process of auditing DML actions in SQL Server. What tools and techniques can be used?	7 Marks	L3	CO3	PO5
	b)	Explain the steps to audit user activities in Oracle databases. What data can be captured in an audit trail?	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	What challenges can arise when auditing large-scale databases, and how can they be mitigated?	7 Marks	L4	CO3	PO4
	b)	Explain how SQL injection attacks can be identified through database auditing mechanisms.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Discuss best practices for ensuring web security in web applications.	7 Marks	L4	CO4	PO2
	b)	Explain the difference between symmetric and asymmetric encryption with examples.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Discuss the concept of hashing and its application in web security.	7 Marks	L2	CO4	PO1
	b)	What is a digital identity certificate, and how is it issued and validated?	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	How can users protect their privacy using Virtual Private Networks (VPNs)?	7 Marks	L3	CO5	PO2
	b)	Discuss the importance of two-factor authentication (2FA) in protecting user accounts from unauthorized access.	7 Marks	L4	CO5	PO2
		(OR)				
10.	a)	Discuss the main physical security measures that can be employed to protect servers.	7 Marks	L2	CO5	PO3
	b)	Discuss various techniques for securing the host environment of web servers.	7 Marks	L2	CO5	PO1

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Answer One Question from each Unit
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UNIT-I						
1.	a)	Discuss the differences between Transactional Applications and Analytical Applications in database environments.	7 Marks	L3	CO1	PO2
	b)	How does Oracle implement Row-Level Security (RLS) with VPD?	7 Marks	L2	CO1	PO1
(OR)						
2.	a)	Mention the application of embedded system	7 Marks	L1	CO1	PO1
	b)	Describe the process of implementing Column-Level Security in SQL Server using Views.	7 Marks	L4	CO1	PO2
UNIT-II						
3.	a)	Explain the difference between Discretionary Access Control (DAC) and Mandatory Access Control (MAC) in database systems.	7 Marks	L4	CO2	PO2
	b)	Explain how to implement Virtual Private Databases (VPD) in Oracle.	7 Marks	L4	CO2	PO2
(OR)						
4.	a)	What are the best practices for ensuring secure DBMS architecture through multi-tier design?	7 Marks	L3	CO2	PO2
	b)	Explain the importance of the conceptual design phase in database security and how the E-R approach is used.	7 Marks	L2	CO2	PO1
UNIT-III						
5.	a)	Explain the significance of auditing in database security. How does it help in ensuring data integrity and accountability?	7 Marks	L4	CO3	PO2
	b)	What is SQL Server Profiler, and how is it used for auditing and monitoring SQL Server activities?	7 Marks	L2	CO3	PO1
(OR)						
6.	a)	Explain the impact of auditing on database performance.	7 Marks	L3	CO3	PO2
	b)	Describe how auditing can help detect anomalies in data access patterns in both Oracle and SQL Server environments.	7 Marks	L2	CO3	PO1
UNIT-IV						
7.	a)	What are the risks associated with weak cryptographic implementations on the web?	7 Marks	L2	CO4	PO1
	b)	Explain the Secure Sockets Layer (SSL) and its role in securing web transactions.	7 Marks	L2	CO4	PO1
(OR)						
8.	a)	Discuss the use of blockchain technology in enhancing web security.	7 Marks	L1	CO4	PO1
	b)	How does cryptography protect against replay attacks in web applications?	7 Marks	L2	CO4	PO4
UNIT-V						
9.	a)	What is the "Web's War on Your Privacy," and how does it impact internet users?	7 Marks	L3	CO5	PO2
	b)	Discuss the role of cookies in online privacy concerns and how they are used by websites	7 Marks	L3	CO5	PO5
(OR)						
10.	a)	Describe how firewalls contribute to host security and server protection.	7 Marks	L2	CO5	PO2
	b)	What are the threats posed by physical access to servers, and how can these be mitigated?	7 Marks	L2	CO5	PO3

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Answer One Question from each Unit

UNIT-I						
1.	a)	What is Attribute-Based Access Control (ABAC)? Provide an example scenario where ABAC would be more effective than RBAC.	7 Marks	L2	CO1	PO1
	b)	Provide an example of how a dynamic WHERE clause is added to a SQL statement. How does Oracle implement Row-Level Security (RLS) with VPD?	7 Marks	L1	CO1	PO1
(OR)						
2.	a)	Explain the role of Encryption in Application Security Models. Why is encryption crucial for both data at rest and data in transit?	7 Marks	L1	CO1	PO1
	b)	What are the steps involved in creating a Security Policy in SQL Server for Row-Level Security (RLS)?	7 Marks	L2	CO1	PO1
UNIT-II						
3.	a)	Describe the process of requirement analysis in database security design and its significance.	7 Marks	L4	CO2	PO2
	b)	Explain the concept of database hardening and the steps involved in securing a database system.	7 Marks	L1	CO2	PO1
(OR)						
4.	a)	Describe the different security mechanisms that can be implemented during the physical design of a database.	8 Marks	L2	CO2	PO1
	b)	What are the key considerations for testing and verifying security mechanisms in a DBMS?	6 Marks	L2	CO2	PO1
UNIT-III						
5.	a)	Difference between auditing in Oracle and SQL Server?	7 Marks	L4	CO3	PO2
	b)	Describe the architecture of security auditing in SQL Server. How	7 Marks	L2	CO3	PO1
(OR)						
6.	a)	How can auditing of database activities improve accountability within an organization?	7 Marks	L2	CO3	PO1
	b)	Explain the concept of a DML (Data Manipulation Language) audit trail	7 Marks	L1	CO3	PO1
UNIT-IV						
7.	a)	Define cryptography and explain its role in web security.	7 Marks	L1	CO4	PO1
	b)	How does digital identification enhance web security?	7 Marks	L3	CO4	PO4
(OR)						
8.	a)	How do certificates work in web security, and what is the role of certificate authorities (CAs)?	7 Marks	L4	CO4	PO2
	b)	What is a man-in-the-middle (MITM) attack, and how does cryptography help mitigate it?	7 Marks	L2	CO4	PO1
UNIT-V						
9.	a)	Explain the role of anonymization tools, like Tor, in web privacy protection.	7 Marks	L4	CO5	PO3
	b)	Explain how Backups and Antitheft techniques ensure data security and privacy.	7 Marks	L4	CO5	PO2
(OR)						
10.	a)	How can users manage their digital footprint to enhance privacy?	7 Marks	L2	CO5	PO5
	b)	How can encryption of backups improve data security and privacy?	7 Marks	L4	CO5	PO2

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UNIT-I						
1.	a)	Describe the common security measures needed for Web Applications.	7 Marks	L2	CO1	PO1
	b)	Describe the Biba Model and its significance in maintaining data integrity. Provide a practical application of this model.	7 Marks	L4	CO1	PO2
(OR)						
2.	a)	Explain the role of Encryption in Application Security Models. Why is encryption crucial for both data at rest and data in transit?	7 Marks	L1	CO1	PO1
	b)	Differentiate between the four types of users in a database system.	7 Marks	L4	CO1	PO2
UNIT-II						
3.	a)	Explain how encryption at rest and encryption in transit secure a database and its data.	7 Marks	L3	CO2	PO2
	b)	Discuss the role of multi-factor authentication (MFA) in enhancing the security of a database.	7 Marks	L4	CO2	PO2
(OR)						
4.	a)	Discuss the importance of verification and testing in database security and the methods used to ensure data integrity.	7 Marks	L4	CO2	PO2
	b)	Explain the significance of backups and recovery plans in database security and how they are implemented.	7 Marks	L2	CO2	PO2
UNIT-III						
5.	a)	Discuss the concept of fine-grained auditing in Oracle. How does it differ from traditional auditing mechanisms?	7 Marks	L4	CO3	PO1
	b)	How can database activities be audited using Oracle? Describe the steps to enable and configure auditing features.	7 Marks	L4	CO3	PO2
(OR)						
6.	a)	What is the purpose of auditing DDL (Data Definition Language) statements in databases?	6 Marks	L2	CO3	PO1
	b)	How can DDL triggers be applied for monitoring changes in database structures?	7 Marks	L2	CO3	PO1
UNIT-IV						
7.	a)	Explain the working of cryptographic protocols used in securing web communication.	7 Marks	L4	CO4	PO4
	b)	Describe the process of digital certificate validation in web transactions.	7 Marks	L2	CO4	PO1
(OR)						
8.	a)	What are the challenges of implementing secure cryptographic protocols in real-time web applications?	7 Marks	L2	CO4	PO1
	b)	What is Transport Layer Security (TLS), and how does it improve upon SSL?	7 Marks	L1	CO4	PO2
UNIT-V						
9.	a)	What is Privacy-Protecting Techniques available for users when browsing the web?	7 Marks	L2	CO5	PO1
	b)	Discuss the role of browser extensions in protecting or compromising web privacy.	7 Marks	L4	CO5	PO2
(OR)						
10.	a)	What are the best practices for securing personal data on social media platforms?	7 Marks	L2	CO5	PO5
	b)	Explain the importance of Physical Security for Servers in maintaining web security and privacy.	7 Marks	L4	CO5	PO2