REG.NO.:

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SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

SLOT: B2 + TB2

Programme Name & Branch	**: B. Tech Computer Science and Engineering**
Course Code and Course Name	**: BCSE317L Information Security**
Faculty Name(s)	**: Common to ALL batches**
Class Number(s)	**: Common to ALL batches**
Date of Examination	**: 17 March 2025**
Exam Duration	**: 90 minutes** **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes
  CO4: Differentiate the needs and application of security in Operating System and Firewalls.
  CO5: Analyse various method of securing databases

Q. No	Question	M	CO	BL
1.	a) List a few functions managed by an operating system. Map these functions to various layers of the operating system that follows the layered design. Justify how such a layering enhances security of the OS (Identify at least two functions for each layer) [5 Marks] b) How do modern operating systems ensure the integrity and authenticity of software components loaded during the boot process? [5 Marks]	10	CO4	4
2.	You're in charge of network security for a small online business. You have a security appliance that can control access to your company's network, but it hasn't been properly configured yet. This means: • Employees can browse websites; however, your company's security policy doesn't permit employees using internet. • Employees can connect to their work computers from anywhere, but these connections aren't necessarily secure. • Anyone could potentially access your company's MySQL database over the network • There are no restrictions on file transfers, so anyone could upload or download files from your systems • There's no way to track who is accessing your network or what they are doing. You start receiving reports of suspicious activity on the network. Given this lack of security measures, what kinds of suspicious activity might you be seeing? How would you go about configuring the security appliance to address these risks and protect your company's valuable data and resources?	10	CO4	4
3.	You're an IT specialist responsible for a company's computer network. You're reviewing network logs and notice that a computer with the IP address 10.02.0.5 is sending out a continuous stream of ICMP Echo requests to a server in your network. This seems unusual to you. Currently, you don't have any specific security measures in place to deal with this kind of activity.	10	CO4	3

	a) Does this activity raise any security concerns? What could be the potential consequences if this activity is left unchecked? [4 Marks] b) What kind of security measures could you implement to address this situation and better protect your network from such pings in the future [6 Marks]			
4.	As a database administrator you are asked to maintain the following data for a company Employee_id, Employee_name, Employee_address, Project_Id, Project_name, Department_id and Department Name Consider the following rules • An employee can work on many projects • Every employee can work for only one department. List all the strategies and associated implementation details (SQL Queries as required) for managing the data such that your implementation satisfies the following database security parameters. • Physical Integrity • Logical Integrity • Element Integrity • User Authentication • Reliability	10	CO5	3
5.	A form receives user input in a textbox and supplies the value directly to a SQL query on the server-side script as shown below. (userinput in the SQL query is the value received from the textbox) $sql = "SELECT username, salary FROM employee WHERE username = '". $userinput . "'"; • Elaborate on how a hacker can exploit this weakness to get more control over your database. (6 Marks) • List a few strategies to prevent such an attack. (4 Marks)	10	CO5	4

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