Reg. No. : | | | | | | | | | | | | |

Question Paper Code: R4H05

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Fourth Semester

CSE (CYBER SECURITY)

R21USY405- ENGINEERING SECURE SOFTWARE SYSTEMS

(Regulations R2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	What are the core properties of secure software?	CO1- U	
2.	Identify two key properties of secure software and explain how they can be applied to protect sensitive data in a mobile banking application.	CO2-App	
3.	Define the key responsibilities of secure Architecture?	CO1- U	
4.	What does the principle of least privilege mean in software security?	CO1- U	
5.	What is the importance of ensuring code analysis in secure software?	CO1- U	
6.	How would you apply penetration testing to identify vulnerabilities in a web application, and what steps would you take to address any issues found.	CO2-App	
7.	What is the purpose of dynamic code analysis?	CO1- U	
8.	What is the significance of operational processes in cyber security?	CO1- U	
9.	What is meant by modeling security metrics?	CO1- U	
10.	How would you use diagnostic metrics to identify and address security weaknesses in an organization's infrastructure?	CO2-App	

PART – B (5 x 16= 80 Marks)

11.	(a)	Explain the SQUARE process model and its steps in identifying and managing security requirements.	CO1- U	(16)
		Or		
	(b)	Explain a software security engineer working on a large-scale enterprise application. Identify and explain common security issues and challenges faced during the development and deployment of secure software in detail.	CO1- U	(16)

12.	(a)	Explain the critical role of Architecture and Design and Explain its issues and challenges.	CO1- U	(16)
		Or		
	(b)	Describe software security engineer working on a large-scale enterprise application. Identify and explain common security issues and challenges faced during the development and deployment of secure software in detail	CO1- U	(16)
13.	(a)	Consider a web application that accepts user input through forms. Apply input validation techniques to ensure that only valid data is processed by the system.	CO2- App	(16)
		Or		
	(b)	Your company is developing a document management system where users upload confidential reports. How would you ensure that only authorized users can access their own files while preventing unauthorized access?	CO2- App	(16)
14.	(a)	Explain the importance of security testing throughout the SDLC with examples.	CO1- U	(16)
		Or		
	(b)	Explain the Common types of security failures in software applications.	CO1- U	(16)
15.	(a)	Our organization is looking to improve its cyber security posture and wants to track its progress over time. You have been tasked with selecting and implementing a set of key security metrics. What types of security metrics would you prioritize to measure the effectiveness of your security program?	CO2- App	(16)
		Or		
	(b)	Suggest an increase in unauthorized access attempts within your network. What diagnostic security metrics would you track to identify the root cause and improve your access control measures?	CO2- App	(16)