

DEPARTMENT OF COMPUTING TECHNOLOGIES

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2032-2024 (ODD/EVEN)

Test: CLAT-3

Date: 9. 11.2023

Course Code & Title: 18CSE357T-Biometrics (Elective)

Duration: 100 minutes

Year & Sem: 3 & 4 Year/5 & 7 Sem

Max. Marks: 50

Course Articulation Matrix: (to be placed)

Course Outcomes	P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12	P O 13	P O 14	P O 15
CO1	3	3	3	3	-	-	3	-	-	-	-	-	-	-	-
CO2	3	3	3	3	-	-	3	-	-	-	-	-	-	-	-
CO3	3	2	2	2	-	-	2	-	-	-	-	-	-	-	-
CO4	3	2	2	2	-	3	2	3	-	-	-	-	-	-	-
CO5	3	3	1	-	-	-	-	-	-	-	-	-	-	-	-
CO6	3	3	3	3	-	-	3	-	-	-	-	-	-	-	-

Part - A (10 × 1 = 10 Marks) Instructions: Answer all						
Q. No	Question	Marks	BL	CO	PO	PI Code
1	In Biometric Systems, which among the following trait is classified as a Hidden biometric trait? (a) Gait (b) Voice (c) DNA sample (d) Hand Geometry Ans: c – DNA sample	1	1	4	1	1.6.1*
2	The feature of a biometric system that ensures that a legitimate individual who accesses a certain resource cannot later deny using the resource is termed as _____ (a) Identification (b) Authorization (c) Non-Repudiation (d) Integrity Ans: c – non-repudiation	1	1	4	1	1.6.1
3	The type of attack on the biometrics system where legitimate users are prevented from obtaining access to the system or resource that they are entitled to, is termed as _____ (a) Denial of Service (b) Intrusion (c) Repudiation. (d) Function Creep Ans: a – Denial of Service	1	1	4	4	1.6.1
4	The security breach caused due to intrinsic limitations of various modules in a biometric system like sensors, and not by any deliberate attack is referred as _____ (a) Exception Abuse (b) Zero-day attack (c) Zero-effort attack (d) Man-in-the-middle attack Ans: c – Zero-effort attack	1	1	4	2	1.6.1

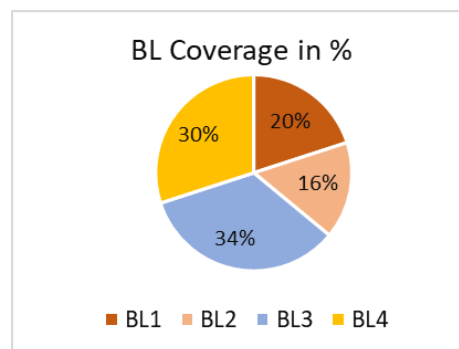
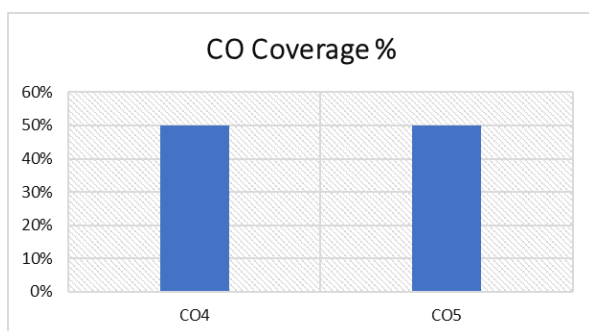
5	<p>The malicious software that facilitates intrusion by unauthorized user, but appears to perform a desirable function is called</p> <p>(a) Virus (b) Spyware (c) Computer worm (d) Trojan horse</p> <p>Ans: d – Trojan horse</p>	1	1	4	1	1.6.1
6	<p>Which among the following secure template property makes it straight forward to discard a compromised template and reissue a new one based on the same biometric data</p> <p>(a) Cryptographic security (b) Revocability (c) Performance (d) Integrity</p> <p>Ans: b - Revocability</p>	1	1	5	2	1.6.1
7	<p>Malaysia was the first country to issue biometric passports. What are the digital identities embedded in Malaysian biometric passport?</p> <p>(a) Facial Image and Retina prints (b) Facial Image and Thumbprints (c) Thumbprints and Retina prints (d) Facial Image and Hand Geometry</p> <p>Ans: b – Facial Image and Thumbprints</p>	1	1	5	2	1.6.1
8	<p>Which among the following biometric trait is used in Optical Score Assignment method for gender determination?</p> <p>(a) Finger print (b) Facial Image (c) Gesture (d) Iris and Retina</p> <p>Ans: a – Finger print</p>	1	1	5	1	1.6.1
9	<p>Which among the following speech recognition systems works on unconstrained speech data</p> <p>(a) Text-dependent systems (b) Text-independent systems (c) Fixed phrase systems (d) Prompted phrase systems</p> <p>Ans: b – Text-independent systems</p>	1	1	5	1	1.6.1
10	<p>Out of the given options, which application comes under the strict access control?</p> <p>(a) Weapon systems (b) Welfare Distribution (c) Gender Classification (d) Immigration & Naturalization</p> <p>Ans: a – Weapon systems</p>	1	1	5	2	1.6.1
<p align="center">Part – B (5× 2 = 10 Marks) Instructions: Answer any five</p>						
11	<p>What is meant by intrinsic failure? State its reasons.</p> <p>- Zero effort attack (1 mark) - limitations of various modules in a biometric system like sensor, feature extractor, and matcher (1 mark) - false match and false non-match failure to enroll, failure to capture (examples) (2 mark) -</p>	2	2	4	2	1.6.1

12	Distinguish between Impersonation and Obfuscation Impersonation: impostor attempts to intrude the system by posing himself as another authorized user (1 mark) Obfuscation: deliberate attempt by an attacker to change his biometric characteristic in order to avoid detection (1 mark)	2	2	4	2	1.6.1
13	State the types of adversarial attacks on Biometric System modules? Unauthorized Modification: Modification of an executable program in a module through a Trojan horse attack (1 mark) Exploitation of faults: Attacker may identify and exploit the loopholes in the implementation of the biometric algorithms (1 mark)	2	2	4	2	1.6.1
14	What are intrusion detection systems? List the parameters used to identify an intruder IDS monitors a network or systems for malicious activity or policy violations (1 mark) Keystroke dynamics, network usage pattern, Patterns using Interactive command interpreter (Any two - 1 mark)	2	3	5	3	1.6.1
15	Describe types of Gesture interpretation Offline Gestures – Processed after user interaction (1 mark) Online Gesture – Direct manipulation gestures (1 mark)	2	3	5	3	1.6.1
16	List the advantages of Industrial Automation - Increasing Productivity - Increasing Quality - Reducing cost - Increasing Safety (2 marks)	2	2	5	3	1.6.1
Part – C (15× 2 = 30 Marks) Instructions: Answer all						
17	What is meant by spoofing attack? Discuss in details the countermeasures and Spoof detection mechanisms that can be employed on biometric systems Spoof Attack: Presentation of a spoof biometric trait using directly colluding, covert acquisition, estimating a close approximation, stealing the biometric template (5 marks) Spoof Detection: Physiological properties, behavioral actions, challenger response (10 marks)	15	4	4	3	1.6.1
	(or)					
18	What are the types of attacks on template databased? Discuss in detail the properties and different approaches for securing template databases. Attacks: Collusion, covert acquisition, brute-force, template leakage (5 marks) Properties: Cryptographic security, Performance, Revocability (5 marks) Countermeasures: Password Security, Encryption, Hash Function (5 marks)	15	4	4	3	1.6.1

19	<p>Explain the biometrics improves the functioning of the following sectors a) Immigration and Naturalization b) Welfare Distribution and c) Military and Intrusion detection</p> <p>Immigration and Naturalization (5 marks): eGates, Digital Passports Welfare Distribution (5 marks): Ration, Scholarship, disaster relief Military and Intrusion detection (5 marks): Access control Systems</p>	15	3	5	3	1.6.1
(or)						
20	<p>What is an audio-visual tracking system? What are the advantages in fusion audio and visual recognition parameters? Explain the fusion architecture. Also explain how gesture interpretation is contributing towards next generation Human Computer Interface systems?</p> <p>AV biometric systems (5 marks): pre-processing, feature extraction, AV fusion. Visual facial features, Speaker recognition (5 marks) AV Fusion methods: Pre-mapping fusion, Midst-mapping fusion, post-mapping fusion (5 marks)</p>	15	3	5	3	1.6.1

***Performance Indicators are available separately for Computer Science and Engineering in AICTE examination reforms policy.**

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



Approved by the Audit Professor/Course Coordinator