b.	Explain the fusion strategies applied after performing the matching operation.	12	3	3	2
31. a.i.	Explain the criteria to evaluate the suitability of key stroke dynamics.	6	3	4	1
ii.	Classify the different types of attacks on biometrics system.	6	3	4	2
	(OR)				
b.	Design a signature detection system with a neat sketch.	12	4	4	3
32. a.	Summarize the importance of biometric application used in immigration of a country.	12	4	5	2
	(OR)				
b.	Discuss how the biometric application advances the industrial automation.	12	3	5	1

* * * * *

Reg. No.														

B.Tech. DEGREE EXAMINATION, JUNE 2023

Fifth & Sixth Semester

18CSE357T – BIOMETRICS

(For the candidates admitted during the academic year 2018-2019 to 2021-2022)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours Max. Marks: 100

		Marks	BL	CO	PO
	PART – A (20 × 1 = 20 Marks) Answer **ALL** Questions				
1.	A biometric task where an anonymous individual is known to be in the database and the system tries to determine his/ her identity? (A) Voice verification (B) Biometric identification (C) Closed set identification (D) Open set identification	1	3	1	1
2.	Match the following a) Data collection i) Voice speaker b) Feature extractor ii) Matching algorithm c) Error rates of biometric system iii) User habituation d) Auditory biometric iv) Evaluation (A) (a)- iii, (b)-ii, (c)-iv, (d)-i (B) (a)- ii, (b)-iii, (c)-iv, (d)-i (C) (a)- i, (b)-ii, (c)-iv, (d)-iii (D) (a)- ii, (b)-iii, (c)-i, (d)-iv	1	2	1	1
3.	The process of locating and encoding unique characteristics from a biometric sample in order to generate a template is called as _____. (A) Sampling (B) Randomization (C) Feature extraction (D) Verification	1	2	1	1
4.	_____ is an example of second order derivative (A) Gradient method (B) Local maxima (C) Local minima (D) Zero crossing	1	1	2	1
5.	The method in which the patterns are represented by models, samples and pixels, is called as _____. (A) Neural network (B) Template matching (C) Statistical matching (D) Elastic bunch gap matching	1	2	2	2
6.	_____ is the process of exploring the overall face image as a weighted average of a number of faces. (A) Skin texture (B) Facial metrics (C) Facial texture (D) Eigen faces	1	2	2	2

7. The basic finger print design is compared between a stored template and a query finger print using _____ algorithms. 1 3 3 2
   (A) Correlation based (B) Economic method
   (C) Pattern based (D) Minutiae based

8. The sensor which measures the capacitance between the skin and the sensor to acquire finger prints is 1 2 2 2
   (A) Capacitive sensor (B) Optical sensor
   (C) Infrared sensor (D) Thermal sensor

9. Two iris codes can be compared using the _____, which computes the number of corresponding bits that are different across them. 1 1 3 2
   (A) Hamming distance (B) Euclidean distance
   (C) Manhattan distance (D) Mahalanobis distance

10. _____ refers to the order in which the various sources of evidence are collected from an individual in a multi-biometric system. 1 2 3 2
   (A) Matching sequence (B) Input sequence
   (C) Acquition sequence (D) Scoring sequence

11. The primary goal of multi-biometric system designers are to reduce _____. 1 1 3 1
   (A) Output (B) Input
   (C) Threshold (D) Error rate

12. The process of generate artificial fingerprint is called 1 3 3 2
   (A) Finger print synthesis (B) Finger print matching
   (C) Finger print analysis (D) Finger print mosaicking

13. _____ ensures that an individual who access a certain resources cannot later deny using it. 1 3 4 2
   (A) Authentication (B) Data confidentiality
   (C) Non-repudiation (D) Authorization

14. Which one of the following is related to hard biometrics? 1 1 4 3
   (A) Hair color (B) Skin color
   (C) Glasses (D) Finger prints

15. The legitimate users must have timely and reliable access to the protected resources / service. This is referred to as _____. 1 3 4 2
   (A) Availability (B) Accessibility
   (C) Accountability (D) Authority

16. _____ refers to information collected for one purpose but being used for another 1 3 4 4
   (A) Repudiation (B) Intrusion
   (C) Function creep (D) Denial-of-service

17. It is a device or software application that monitors a network or systems for malicious activities or policy violations. 1 3 5 3
   (A) Information security (B) Identity management
   (C) Process management (D) Intrusion detection system

18. _____ is used for more effective password management in banking. 1 2 5 3
   (A) Internet banking (B) Mobile banking
   (C) Single sign on (D) Multiple sign on

19. Which of the following is not a biometric identifier? 1 1 5 1
   (A) Finger prints (B) Moles
   (C) Facial patterns (D) Typing cadence

20. The following method is used for gender classification 1 3 5 2
   (A) Optimal score assignment (B) Optimal score alignment
   (C) Object score assignment (D) Object score alignment

PART – B (5 × 4 = 20 Marks) Marks BL CO PO
Answer **ANY FIVE** Questions

21. What are types of authentication based biometrics? Give example. 4 1 1 1

22. Summarize the four categories of users defined by Duddington's zoo in biometrics. 4 4 1 3

23. Enumerate the challenges involved in biometric data collection. 4 3 2 2

24. Explain the features of Iris layers. 4 2 2 1

25. Describe the requirement of multimodal biometrics. 4 3 3 3

26. Distinguish between soft and hard biometrics. 4 2 4 2

27. What is gesture interpretation? List its types. 4 1 5 1

PART – C (5 × 12 = 60 Marks) Marks BL CO PO
Answer **ALL** Questions

28. a. Explain the operation of a biometric system with a neat sketch. 12 2 1 1

(OR)

b.i. Explain different types of images. 6 3 1 1

ii. Explain the geometric transformation used in image processing. 6 3 1 1

29. a. Describe intensity transformation techniques used in image enhancement. 12 3 2 2

(OR)

b. Explain the process of biometric finger print recognition system with a neat sketch. 12 3 2 2

30. a. How the multi-biometric systems are classified based on the sources of evidence? Explain. 12 4 3 3

(OR)