27. a. Define Principal Component Analysis (PCA). Explain why it can be used for biometric authentication process? List the main steps in order to implement this method. Point out the major advantages using this method. `10  2  3  1`

(OR)

b. Analyze any five reasons in order to make biometrics a part of your multifactor authentication strategy. `10  2  3  1`

28. a. Write short notes on `2  1  1`
    (i)   Unimodal biometric system `5`
    (ii) Advantages of face biometrics `5`

(OR)

b. With the help of a neat diagram, explain the major activities taking place in the biometric systems. `10  2  1  1`

29. a. Illustrate the architecture of multimodal biometric system. Also, discuss the design issues with multimodal biometric system. Support your answer with suitable diagram. `10  4  1  1`

(OR)

b. With the help of a neat sketch, elaborate the DNA recognition system. Also, enumerate its advantages and disadvantages. `10  4  3  1`

30. a. Evaluate the benefits of biometrics systems and draw a comparison with the traditional authentication systems. `10  2  5  1`

(OR)

b. Enumerate and give a detailed elaboration of the criteria to evaluate the suitability of keystroke dynamics. `10  2  5  1`

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Reg. No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

B.Tech. DEGREE EXAMINATION, NOVEMBER 2022
Sixth/ Seventh Semester

18CSE357T – BIOMETRICS
(For the candidates admitted from 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** should be answered in answer booklet.

Time: 2½ Hours   Max. Marks: 75

PART – A (25 × 1 = 25 Marks)   Marks BL CO PO
Answer **ALL** Questions

1. There is a method that is applied on digital image in order to alter the values of its individual pixels, which is known as `1  1  2  1`
   (A) Image registration   (B) Geometrical special transformation
   (C) Neighbourhood operations   (D) Single pixel operation

2. The process involved in the removal of extra tail pixels in an image is called `1  1  3  1`
   (A) Image   (B) Object
   (C) Foreground   (D) Background

3. A reflection of a persons psychological personality, although physical characteristics, such as gender and size, have a key impact `1  1  1  1`
   (A) Thermo grams (B) Behavioral
   (C) Sensor   (D) Modality

4. This is a subclass of physical AND/OR behavioral traits through which a person is uniquely distinguishable. `1  1  1  1`
   (A) Modality (B) Live scan
   (C) Sensor   (D) Identity

5. From the given applications, which one of them falls under biometrics? `1  1  1  1`
   (A) Suspect tracking   (B) Video surveillance
   (C) Home video game systems (D) Person identification

6. There is a particular methodology in which the patterns are represented by models, samples and pixels, which is called _____. `1  1  4  1`
   (A) Neural network   (B) Statistical approach
   (C) Template matching   (D) Elastic bunch gap matching

7. A particular biometric system that is based on direct measurement of the parts of human body such as iris, shape, fingerprint, position of fingers, etc `1  1  2  1`
   (A) Physiological modalities (B) Facial modalities
   (C) Biometric modalities   (D) Behavioural modalities

8. Out of the given options, which of the application comes under the access management area?   1   1   3   1
   - (A) Fraud identification
   - (B) Online banking
   - (C) Permission-based systems
   - (D) Investigations

9. The basic fingerprint design is compared between a stored template and a query fingerprint using _____ algorithms.   1   1   4   1
   - (A) Correlation based
   - (B) Economic method
   - (C) Patten based
   - (D) Minutiae based

10. Identity cards like Aadhar cards and national security is an application of?   1   1   5   1
    - (A) Voice recognition system
    - (B) Facial recognition system
    - (C) Iris recognition system
    - (D) Finger recognition system

11. There is an automatic technique for locating and translating salient features from a biometric sample in order to produce a template which is called   1   1   4   1
    - (A) Feature extraction
    - (B) Signature recognition
    - (C) Verification
    - (D) Extraction

12. There is a biometric practice where an undisclosed individual is known to be the database and the system tries to find their identity.   1   1   2   1
    - (A) Voice verification
    - (B) Closed-set identification
    - (C) Open-set identification
    - (D) Biometric identification

13. Among the given options, which of the options can be correctly referred to as a proprietary finger scanning method?   1   1   2   1
    - (A) Auto correction
    - (B) Recognition
    - (C) Extraction
    - (D) Bifurcation

14. This term is used to refer the process of collecting a biometric sample from an individual through a sensor.   1   1   1   1
    - (A) Feature extraction
    - (B) Live scan
    - (C) Iris recognition
    - (D) Submission

15. This is a user background for biometrics systems functioning in the verification or open-set identification tasks   1   1   5   1
    - (A) Model
    - (B) Arch
    - (C) Sensor
    - (D) Threshold

16. This is a process by which the biometric sample caught in the previous block in converted into an electronic representation. This electronic representation is known as a biometric template while enrollment also known as live sample during authentication.   1   1   5   1
    - (A) Bifurcation
    - (B) Verification
    - (C) Extraction
    - (D) Recognition

17. The interaction between the end user and a biometric system causes the capture of biometric sample, such a process is known as   1   1   3   1
    - (A) Identity
    - (B) Live capture
    - (C) Live scan
    - (D) Mimic

18. Depending on the need of any biometric application, the threshold is _____ so that the biometric system can be more or less strict.   1   1   4   1
    - (A) One-to-one
    - (B) Arch
    - (C) Strict
    - (D) Adjustable

19. The general terminology used for defining biometric systems (iris recognition or face recognition) relating to their essential function   1   1   4   1
    - (A) Extraction
    - (B) Recognition
    - (C) Sensor
    - (D) Comparison

20. This is a typical method that is used to make sure that biometric sample that is submitted is from the end user   1   1   5   1
    - (A) Open-set identification
    - (B) Live scan
    - (C) Extraction
    - (D) Liveness detection

21. Out of the given options, which of the options is the process of exploring the overall face image as a weighted arrangement of a number of faces.   1   1   4   1
    - (A) Facial metrics
    - (B) Skin texture
    - (C) Eigen faces
    - (D) Facial texture

22. The nodal points measured by software for face recognition is   1   1   2   1
    - (A) Face width scan
    - (B) Appearance texture
    - (C) Model-based face recognition
    - (D) Width of the nose

23. In face recognition, the number of types of comparisons are   1   1   3   1
    - (A) Five
    - (B) Three
    - (C) Two
    - (D) One

24. Which of the following functions comes under the function of image blurring?   1   1   4   1
    - (A) Gross representation
    - (B) Object detection
    - (C) Object motion
    - (D) Segmentation

25. In the given options, which one of the options is not physiological type biometric?   1   1   4   1
    - (A) Iris scan
    - (B) Finger scan
    - (C) Voice scan
    - (D) Face scan

PART – B (5 × 10 = 50 Marks)
Marks BL CO PO

Answer ALL Questions

26. a. There are two kinds of biometrics from an eye, that is iris and retina. Compare their features and elaborate their advantages and disadvantages.   10   2   2   1

(OR)

b. In face recognition, face detection and location is a very vital stage. There are two main types namely, statistics-based method and knowledge-based method, in order to implement this function. Each type is inclusive of few methods. could you elaborate and show at least one method for each type and explain how it works?   10   2   2   1