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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 51131 Roll No. 1 2 3 0 2 6 4 0 2 8

BCA Examination 2025-26

Odd Semester

BIOMETRIC SECURITY

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION–A

1. Attempt all parts of the following : $1 \times 8 = 8$

   (a) Define biometrics and biometric modalities.

   (b) What is the difference between identification and verification?

   (c) Define biometric template.

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(d) Write any two advantages of multimodal biometric system.

(e) Write two behavioral biometric technologies.

(f) Define false acceptance rate (FAR).

(g) What is the function of biometric sensor?

(h) What is two factor authentication?

SECTION – B

2. Attempt any two parts of the following. $2 \times 6 = 12$

(a) Explain different types of biometric systems: unimodal and multimodal.

(b) Describe in detail the process of fingerprint enhancement and classification.

(c) Explain the concept of keystroke dynamics with its characteristics, strengths and weaknesses.

(d) Write a short note on :

(i) Gait recognition

(ii) Speech recognition

SECTION – C

Note:- Attempt any two parts from each question. Each part carry equal marks. $8 \times 5 = 40$

3. (a) Explain the stages of working of biometric system with a neat diagram.

(b) Discuss biometric standards and templates.

(c) Describe the modes of operation in biometric systems-identification and verification.

4. (a) Explain in detail face recognition technology and its feature extraction techniques.

(b) Compare physiological and behavioral biometric technologies with examples.

(c) Explain in detail the architecture and levels of fusion in multimodal biometric systems.

5. (a) What are the various types of attacks on biometric systems? Explain template and user interface attacks.

(b) Describe the role of two factor authentication in biometric security.

(c) Discuss the security issues related to biometric databases.

6. (a) Discuss the speech and gait recognition techniques in detail.

(b) Explain statistical measures of biometrics- FAR, FRR, EER and ROC curve.

(c) Write a detailed note on biometric applications and future trends.

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