



विश्वजीवनमृतं ज्ञानम्

Atal Bihari Vajpayee Indian Institute of Information Technology & Management, Gwalior

IT009: Digital Watermarking

Major Examination (Session 2024–25)

Maximum Time: 3 Hours

Max Marks: 60

Note: Attempt any five questions. Clearly mention assumptions and steps in derivations.

1. (a) Explain in detail the architecture of a generic watermarking system. (b) Discuss the key requirements for a secure watermarking algorithm. (10 Marks)
2. (a) Derive the steps for embedding and extracting a watermark using DCT-based watermarking. (b) Provide an example with an 8×8 block transformation. (12 Marks)
3. (a) Explain reversible watermarking. (b) Give an algorithm to embed and recover watermark without loss of host data. (10 Marks)
4. (a) Discuss how digital watermarking can be attacked using geometric distortions. (b) Explain countermeasures against cropping and scaling attacks. (8 Marks)
5. (a) Differentiate between image, audio, and video watermarking techniques. (b) Give application examples for each domain. (10 Marks)
6. Write short notes on any two: (i) Watermarking for medical imaging (ii) Blockchain-based watermarking approaches (iii) Benchmarking datasets for evaluating watermarking algorithms (10 Marks)