

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

IT009: Digital Watermarking

Major Examination (Session 2023–24)

Maximum Time: 3 Hours

Max Marks: 50

Note: Attempt any five questions. Clarity and proper justification will be rewarded.

1. (a) Discuss in detail the properties of a good digital watermarking system. (b) Explain trade-offs between robustness, capacity, and imperceptibility. (10 Marks)
2. (a) Describe frequency-domain watermarking techniques such as DCT-based embedding. (b) Illustrate embedding of a watermark into an 8×8 block of an image. (10 Marks)
3. (a) Explain the concept of blind, semi-blind, and non-blind watermarking. (b) Give real-world examples of each type. (8 Marks)
4. (a) What are common attacks on watermarks (e.g., compression, cropping, filtering)? (b) Discuss countermeasures to withstand such attacks. (8 Marks)
5. (a) Describe spread-spectrum watermarking with mathematical formulation. (b) Highlight its advantages over LSB embedding. (7 Marks)
6. Write short notes on any two: (i) Reversible watermarking (ii) Watermarking in video streams (iii) Benchmarking tools for watermarking evaluation (7 Marks)