IILM University, Greater Noida

QUESTION BANK (End Term Exam) Exam Date: May 9 – 30, 2025

SECTION A

SHORT ANSWER TYPE QUESTIONS [Marks 2]

Unit - 1

1. Define multimedia and write its key components.
2. Give two applications of multimedia in the field of education.
3. Differentiate between bitmap and vector graphics.
4. Define Colour Depth with an example.
5. Analyze the resolution specifications of two cameras (Camera A: 4000×3000 pixels, Camera B: 2000×1500 pixels) and determine which offers better image quality. Justify your answer.

Unit - 2

6. Differentiate Sampling and Quantization in audio data acquisition.
7. Illustrate any two features of MPEG audio compression.
8. Define psychoacoustics. How is it relevant in audio compression?
9. What is a digital model of speech production?

Unit - 3

10. Define the two terms: Image Acquisition, Image Representation.
11. Name two bi-level image compression standards and mention their primary use.
12. What is transcoding in the context of multimedia systems?

Unit - 4

13. What is the purpose of the Real-time Transport Protocol (RTP) in multimedia networks?
14. Define Quality of Services (QoS) and mention two QoS parameters important in multimedia communication.
15. What does it stand for in the context of interactive television (ITV).?

Unit - 5

16. What is digital watermarking, and how is it used in multimedia security?
17. List any two common security attacks on multimedia content.
18. Define forensic data acquisition.
19. What is the primary goal of Digital Forensics?

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SECTION B

LONG ANSWER TYPE QUESTIONS [Marks 6, 8, 10]

Unit 1

1. Consider the following multimedia-related headlines:
   1) *The Ultimate Guide to Multimedia Elements for Beginners*
   2) *Watch the Two-Minute Video to Learn How to Create Stunning Animations in Blender*
   3) *Stuff About Multimedia*
   4) *Learn Multimedia*
   5) *Watch a Two-Minute Video to Become an Expert in C Programming*

   Evaluate each headline's effectiveness in clarity, relevance, engagement, and target audience. Which of these headlines are appropriate and which are not? Justify your choices with suitable reasoning.
2. Explain the different multimedia elements in detail, including text, image/graphics, audio, video, and animation. Provide an example of each.
3. Discuss the various applications of multimedia in fields like education, entertainment, business and healthcare.
4. Describe the characteristics of text and images in multimedia. How do they contribute to effective communication?
5. Compare and contrast audio and video elements in multimedia. How are they integrated into multimedia systems?
6. Analyze how text, images, audio, and animation elements work together in YouTube videos to enhance viewer understanding and engagement. Provide relevant examples from educational or tutorial videos to support your answer.
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Unit - 2

8. Explain the process of audio and speech data acquisition. Discuss the roles of sampling and quantization in converting analog speech to digital format.
9. Describe the human speech production mechanism and how it is modelled digitally for analysis and synthesis of speech.
10. Discuss low-bit-rate speech compression techniques and explain how MPEF audio compression achieves efficient audio storage and transmission.
11. Create a block diagram of a digital speech synthesis system and describe each component's role.
12. Define MPEG audio Compression. What are the key steps in MPEG audio Compression.
13. Explain the process of speech signal digitization and discuss its importance in multimedia applications.

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Unit – 3

14. Explain the process of image and video acquisition and representation. How is this data typically stored and processed?
15. Compare and contrast the ITU Group III and IV standards with JPEG for image compression. Highlight the differences in compression methods and applications.
16. Describe the MPEG and H.264/AVC video compression standards in detail. How do they achieve high compression while maintaining video quality? Also, explain the concept and importance of transcoding.
17. Define RLE with an example and write its advantages and disadvantages.
18. A fax Machine sends the following text: 1111111111000000000011111111110000000000, Where 0 is black and 1 is a white pixel. CCITT Group 3 uses RLE and Huffman coding to compress the pattern. Compress the text to generate the final compressed output.
19. Analyze a binary image row represented by the following pixel sequence, where 1 represents a white pixel, and 0 represents a black pixel: 1111111111000000000011111111110000. Compress the image using CCITT Group 3 (CCITT U) compression standard based on Modified Huffman Run-Length Encoding.
    i. Apply Run-Length Encoding (RLE) to the given binary sequence and represent it as alternating runs of 1s and 0s.
    ii. List the advantages of CCITT U for binary image compression in real-world scenarios.

Unit – 4

20. Explain the roles of RTP, RTCP, RTSP, and SIP in multimedia communication. How do these protocols support real-time media delivery?
21. Define the following protocols: a)RTP b)RTCP c)RTSP d)SIP
22. Discuss the concept of Media on Demand and describe different broadcast schemes used for Video on Demand (VoD). How is buffer management handled in these systems?
23. Describe the challenges and solutions for delivering multimedia content over wireless networks. Highlight the impact of network condition on QoS and user experience.
24. Evaluate the role of RTP, RTCP, RTSP, and SIP protocols in delivering multimedia content over networks.
25. Define Multimedia Network Communication and Quality of Service (QoS) in the context of multimedia systems. Analyze the key components of QoS that are essential for the reliable and efficient transmission of multimedia data over a network.

Unit – 5

26. Explain the concept of multimedia encryption. How does it ensure the confidentiality and integrity of multimedia data?
27. Discuss the taxonomy of digital forensics. Explain its goals and key requirements in the context of multimedia data.
28. Describe the process of forensic data acquisition and analysis. How is validation performed to

ensure evidence integrity?

29. Explain the principles of multimedia encryption and its role in content protection.
30. Digital watermarking and multimedia encryption are crucial for protecting digital content. Evaluate these techniques in terms of their effectiveness in preventing unauthorized use and ensuring content authenticity. Illustrate with examples.
31. Explain Forensics Multimedia encryption in detail . Discuss the security attacks in digital watermarking