

(b) What is luminance, and how is it represented in digital video? How does it contribute to the overall image quality? (7.5)

7. Explore the concept of adaptive video compression and streaming, focusing on how video compression adapts to changing network conditions and device capabilities. Discuss the benefits of adaptive streaming for delivering high quality video content to users. (15)

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Total Pages : 4

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B.Sc. (Animation and Multimedia) - IIIrd SEMESTER

Fundamentals of Audio and Video

(BSC-AM-19-303)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.
2. Answer any four questions from Part-B in detail.
3. Different sub-parts of a question are to be attempted adjacent to each other.

PART-A

1. (a) How does camera movement affect the production quality of a video? (1.5)  
(b) What is the purpose of using a tripod in video production? (1.5)  
(c) What is an audio editing tool, and how does it differ from other audio software? (1.5)

- (d) How can you edit different sound formats within an audio editing tool? (1.5)
- (e) What are some typical operations available under the File, Edit, Process, Effects, and Tools menus in an audio editing tool? (1.5)
- (f) What is the significance of the sample rate and bit depth in digital audio processing? (1.5)
- (g) What is the role of a director during the production phase? (1.5)
- (h) Explain the purpose of the standard and transport toolbar in audio editing software. (1.5)
- (i) What is the role of a script in video pre-production? (1.5)
- (j) What is the significance of lighting in video production? (1.5)

### PART-B

- 2. (a) Describe the various components and processes involved in video compression, including spatial and temporal redundancy reduction, quantization, entropy coding, and motion compensation. How do these elements work together to achieve compression? (7.5)
- (b) What are the various video compression techniques used in digital video, and how do they impact video quality and file size? (7.5)

- 3. (a) How does digital video sampling work, and what role does the Nyquist theorem play in determining the required sampling rate for video signals? (7.5)
- (b) Explain the concept of interlacing in video and how it differs from progressive scanning. What are the advantages and disadvantages of each? (7.5)
- 4. Discuss the challenges associated with video compression, such as maintaining video quality, handling different types of content (e.g., animations vs. live action), and the impact of compression artifacts. How have these challenges been addressed over time? (15)
- 5. (a) Distinguish between lossy and lossless video compression techniques. Provide examples of situations where each type of compression is more suitable, and discuss the trade-offs involved in their use. (7.5)
- (b) What are the ethical and social considerations associated with the manipulation of digital video, including deepfakes and misinformation? How can these issues be addressed in the digital age? (7.5)
- 6. (a) Dive into the video compression standards by elaborating on MPEG-1, MPEG-2, and MPEG-4. Discuss their respective features, applications, and the technological advancements they introduced in the world of digital video. (7.5)