

Term End External Examination 1st Semester (Session-Feb 2025)

Subject: Computer Applications

Course No and Title: CAP122N/ Internet Basics & Multimedia Computing

Time: 2.15 hours Max Marks:100 Min. Marks:40

Section A: Objective Type Questions

Q1. Choose the appropriate Answer: (8x1.5=12)

- i. What does automatic authoring refer to in multimedia?
 - A Tool that automatically add metadata
 - B Creating hyperlinks for webpages
 - C Generating multimedia content with minimal human intervention
 - D Designing user interfaces
- ii. Which of the following is an audio file format?
 - A WAV
 - B MIDI
 - C AVI
 - D All of the above
- iii. Which dithering algorithm distributes quantization error to neighboring pixels?
 - A Ordered dithering
 - B Run-length coding
 - C Floyd-Steinberg dithering
 - D Uniform quantization
- iv. JPEG compression is based on:
 - A Discrete Cosine Transform (DCT)
 - B Run-length coding
 - C Variable-length coding
 - D Huffman encoding
- v. Lossy compression is characterized by:
 - A Complete reconstruction of original data
 - B Only being applicable to text files
 - C Removal of some data that may result in distortion
 - D Higher data redundancy after compression
- vi. Which of the following is a common distortion measure in lossy compression?
 - A Mean Squared Error (MSE)
 - B Run-length Encoding
 - C Entropy
 - D Huffman Coding

- vii. JPEG stands for
 - A Joint Photo Experts Gross
 - B Joint Photo Experts Group
 - C Joint Photo Expression Group
 - D Joint Processor Experts Group
- viii. JPEG compression is mainly:
 - A Lossless
 - B Predictive
 - C Lossy
 - D Bitwise

Section-B: Descriptive Type Questions (Short Type)

Q2: Answer all the Questions (8 x 4 =32)

- i. What is the role of a web browser in accessing the WWW? Provide examples of popular browsers.
- ii. How can you create an ordered and unordered list in HTML? Provide examples.
- iii. What is an 8-bit gray-level image? How does it differ from a 1-bit image?
- iv. What is dithering, and why is it used in image representation?
- v. Derive the formula for entropy and explain each term involved.
- vi. What is Peak Signal-to-Noise Ratio (PSNR)?
- vii. What is I-Frame in MPEG Video compression Standard?
- viii. Define coding redundancy and interpixel redundancy?

Section – C: Descriptive Type Questions (Medium Type)

Answer all the questions: (4 x 7=28)

Q3. Explain with example the basic structure of an HTML document.

OR

What is hypermedia, and how does it differ from multimedia?

Q4. What factors should be considered when choosing an image file format for web applications versus printing?

OR

Explain how GIF achieves compression using **Lempel-Ziv-Welch (LZW)** encoding.

Q5. Differentiate between lossy and lossless compression?

OR

Explain Shannon- Fano Coding with examples?

Q6. What is bit-level compression, and how does it differ from other image compression techniques?

OR

Describe the main steps involved in JPEG compression.

Section – D: Descriptive Type Questions (Long Type)

Answer any two of the following: (2 x 14=28)

Q7. What is multimedia authoring, and why is it essential for creating multimedia applications?

Q8. Compare the following file formats based on compression type, quality, and use cases: GIF , JPEG, PNG ,TIFF

Q9. A Series of messages is to be transformed between two computers. The message comprises of character 'a' through 'f'. The probability of occurrence of characters 'a' through 'f' is 0.4, 0.2,0.1, 0.1 ,0.1 and 0.1, respectively. Use Huffman coding to derive a codeword set and also obtain the average code length.

Q10. Explain MPEG- II Video compression Algorithm? What are the key applications of MPEG-II in multimedia systems?