Multimedia:

Unit-1
1) Global structure of multimedia with explanation of domains.
2) Types of medium/medias
3) Components of multimedia system.

Unit-2
4) MIDI Message
5) Speech Generation

Unit-3
6) Image file format & Image Format.
7) Raster Graphics vs. Vector graphics & Bitmap vs. vector.
8) Dithering & Image Transmission

Unit-4
9) Computer video formats
10) Animation Languages
11) Video vs. Animation.

Unit-5
12) Huffman coding, Run-length coding.
13) JPEG and MPEG Compression process

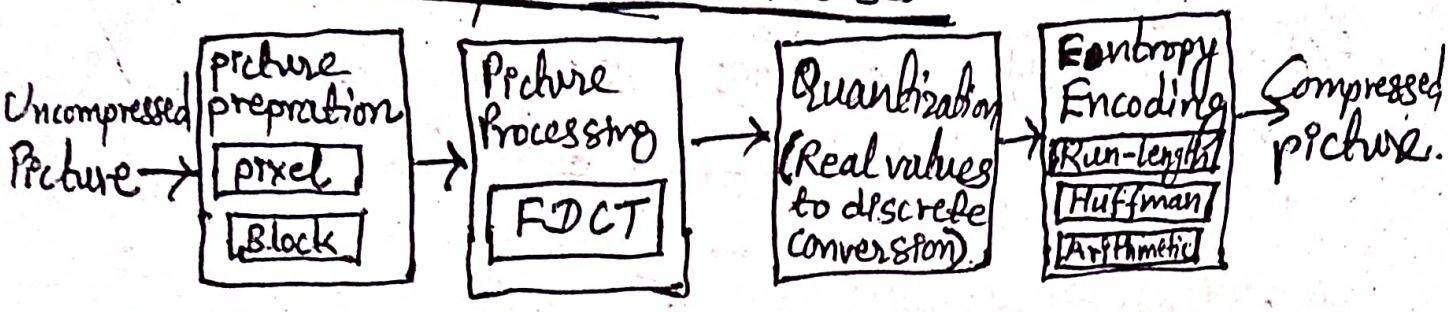
Unit-6
14) Discuss user interface design.

Unit-7
15) Abstraction Levels
16) Libraries, Toolkits, Media as classes.

Unit-8
17) Application of multimedia in entertainment, Telemedicine, e-learning

18) Explain application development life cycle of multimedia systems.
19) Lossy vs. Lossless compression.
20) Compare quality with file size.

JPEG Compression Process



Steps/Process

1) Picture Prepration: The input image is divided into a small block which is having 8x8 dimensions. The dimension is sum up to 64 units. Each unit of image is called pixel.

JPEG uses [Y, Cb, Cr] model instead of [R, G, B] model. Here, Y is brightness, Cb is color blueness and Cr stands for color redness. So, RGB is converted to YCbCr.

2) Picture Processing: After the conversion of colors it is forwarded to DCT. DCT uses a cosine function and does not use complex numbers. It converts informations which are in a block of pixels from the spatial domain to frequency domain. DCT decreases frequencies so that humans are able to see important aspects.

3) Quantization: Quantization is the process of reducing the number of bits needed to store an integer value by reducing the precision of integer. After DCT or picture processing has been performed, the real number values from previous step are mapped to discrete values.

4) Entropy Coding: Finally the data is further compressed using entropy coding methods such as run-length coding, Huffman coding etc. This is the final lossless compression applied during JPEG compression process.

MPEG Compression Process:

1) **Reduction of Resolution:** MPEG uses YUV model instead of RGB so, first ~~out~~ step is to convert RGB into YUV model.

2) **Motion Estimation:** An MPEG video can be understood as a sequence of frames. Motion estimation calculates motion vector for finding the matching blocks between the future frame corresponding to the present frame.

3) **Picture Processing / DCT:**

4) **Quantization:**

5) **Entropy Encoding:**

write same theory as in JPEG process only 1 and 2 step added or replaced here