M. TECH. COMPUTER TECHNOLOGY 4ᵀᴴ SEMESTER EXAMINATION, 2024
MULTIMEDIA TECHNOLOGIES

Time: Three hours   Full Marks: 100

Answer any five questions

1. a) What is the meaning of font size? Taking a font size of point 10 explain the font size measurement with the help of a diagram.
   b) With the help of a diagram explain ascender, descender, leading, tracking and kerning.
   c) Explain jagging and antialiasing with a suitable diagram.
   d) Explain different components a multimedia system

5 + 5 + 4 + 6

2. a) An image has gray levels ranging from 0 to 7. The histogram of the image is given below:

Graylevel	0	1	2	3	4	5	6	7
Frequency	18	27	43	33	21	24	56	78

Apply histogram equalization to the image.
b) A source emits four symbols {a, b, c, d} with the probabilities 0.5, 0.2, 0.1, and 0.2 respectively. Obtain arithmetic coding to encode the word "dacca"

10+ 10

3. a) Discuss 2-step procedure for creating animations.
   b) Compare cel animation and path animation.
   c) Explain anticipation, arcs, and exaggeration in the context of animation.
   d) Discuss "Onion Skinning" animation technique.

6 + 4 + 6 + 4

4. Explain JPEG compression scheme for
   a) Sequential mode
   b) Progressive mode
   c) Hierarchical mode
   d) Lossless mode

6 + 6 + 6 + 2

5. a) Discuss a method for detection of boundary between two consecutive shots in an uncompressed video.
   b) Describe twin-comparison approach for gradual transition detection.
   c) Explain LZW compression scheme

6 + 6 + 8

6. Consider a video with 560 × 480 and a frame rate of 30 fps. Assuming p=21 and N=16 compute OPS_per_second for motion vectors using (with brief explanation of each method)
   a)   Sequential search
   b)   2D Logarithmic search, and
   c)   Hierarchical search

6 + 6 + 8

7. For H.261 video compression standard explain decoder and encoder for the following with suitable block diagram
a) I-frame
b) P-frame

10 + 10