B.E. PRINTING ENGINEERING THIRD YEAR SECOND SEMESTER EXAM 2024
MULTIMEDIA COMMUNICATION(HONS.)

Time : 3 hrs   **Full Marks: 100**

CO1, CO2 and CO5 (Answer any three of the following questions)

1. Define multimedia and explain its significance in modern digital communication. Discuss the role of multimedia in collaborative communication tools such as video conferencing, virtual meetings, and remote collaboration platforms. Compare between hypermedia and multimedia with example. Give example of multimedia software tool image, video and animation.   [4+5+4+4+3=20]

2. What is Anti-aliasing? Discuss the role of typography, font choice, and text formatting in enhancing the visual appeal and effectiveness of multimedia text content. Define tracking , kerning and leading with examples . Give example of three file formats for audio, video and animation. Explain the classification of multimedia types. Describe the key features and functionalities typically found in authoring tools.   [2+4+4+2+4+4=20]

3. Compare the raster and vector graphics in multimedia communication include the advantages and limitations of each approach in terms of scalability, image quality, and editing flexibility? Compare the characteristics of different types of monitors used in multimedia communication, including CRT, LCD, and PDP displays. Highlight their advantages and disadvantages in terms of image quality, resolution, response time, and energy efficiency. What is MIDI, and how does it differ from audio file formats like MP3 or WAV? Calculate the estimated file size of the uncompressed audio file. Audio duration: 5 minutes Sampling rate: 44.1 kHz (kilohertz) Bit depth: 16 bits per sample Number of channels: Stereo (2 channels)   [5+6+2+4+3=20]

4. Given a monitor with dimensions 1920 pixels wide and 1080 pixels tall, calculate its aspect ratio.What would be the aspect ratio if the width was 2560 pixels instead? A monitor supports a color depth of 24 bits per pixel (8 bits per channel for RGB). If the monitor has a resolution of 1920 pixels wide and 1080 pixels tall, calculate the total memory required to store a single frame of the display. Compare the file sizes of an image saved with a color depth of 24 bits per pixel and the same image saved with a color depth of 32 bits per pixel. Discuss how the increased color depth affects the file size and storage requirements. A smartphone has a screen size of 5.5 inches diagonally and a resolution of 1920 pixels wide and 1080 pixels tall. Calculate the pixel density in pixels per inch (PPI). What are the parameters of Monitor required for the appearance of an image and briefly explain with the suitable example ? Define- Staging and anticipation in animation   [3+3+3+2+6+3=20]

5. Explain the differences in frame rates and refresh rates between NTSC and PAL. How do these standards handle interlacing and motion smoothness in broadcasted content? Describe common chroma subsampling ratios, such as 4:4:4, 4:2:2, and 4:2:0. What do these ratios signify, and how do they affect the distribution of color information in an image? How are the original RGB values transformed into luminance and chrominance components? Compare the advantages and limitations of S-video compared to composite and component video. In what scenarios would S-video be preferred over other video formats, and vice versa?   [2+3+7+3+5=20]

[Turn over

CO3 and CO4 (Answer any two of the following questions)

6. Compare the bus, ring, and star topologies in terms of their architecture, scalability, and fault tolerance. Explain how peer-to-peer (P2P) networks are utilized for distributing multimedia content and discuss their advantages and limitations compared to traditional client-server architectures. Briefly explain about the types security threats and Name a technique which is used to secure the data? [8+7+5=20]

7. A source emits characters from an alphabet = {A, B, C, D, E} with probabilities P(A)=0.2, P(B)=0.15, P(C)=0.3,P(D)=0.1, and P(E)=0.25. Calculate the entropy of the given source using the provided probabilities. Implement a Huffman coding algorithm to find the optimal variable-length binary codes for the characters in the alphabet based on their probabilities. Generate a Huffman tree to visualize the encoding process. Encode a sample message using the Huffman code obtained and provide the encoded message. Discuss the difference between lossless and lossy compression techniques in multimedia data compression. [15+5=20]

8. What are semantic HTML elements? Provide examples and explain their significance in web development. Explain the difference between inline, internal, and external CSS stylesheets, including their advantages and limitations. Create an HTML table (<table>) with three columns and two rows. Populate the table cells with any data of your choice (e.g., names, ages, cities) . Create an unordered list (<ul>) containing at least three items related to your favorite hobbies or interests. Each list item (<li>) should represent a separate hobby or interest. [5+8+4+3=20]