M.Tech Printing Engineering and Graphics Communication
First Year First Semester Examination 2024
Multimedia Systems and Communication

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

Answer any five of the following questions:

1. Define multimedia and explain its key components. Discuss an overview of multimedia applications in various fields such as education, healthcare, and entertainment. How do these applications enhance user experiences and communication? Compare and contrast different multimedia file formats. How does the choice of file format impact the quality and size of multimedia content? Compare raster and vector graphics in multimedia. Provide examples of situations where each type is most suitable. [3+(5+4)+5+3=20]
2. Analyze the ethical considerations in multimedia content creation and distribution. How can multimedia professionals address issues such as privacy and intellectual property rights? Define the term "refresh rate" concerning monitors. How does a higher refresh rate impact the display of multimedia content? Discuss the importance of color depth in monitors. How does color depth affect the reproduction of colors in multimedia content? Compare Liquid Crystal Display (LCD) and PDP monitors. What are the advantages and disadvantages of each technology? [3+3+(1+2)+(2.5+2.5)+6]
3. Compare 4:4:4, 4:2:2, and 4:2:0 chroma subsampling formats. How do these formats affect color accuracy and data compression in video signals? Discuss the advantages and disadvantages of composite video compared to component video. In what scenarios is composite video commonly used? What benefits does digital video transmission offer, and how has it impacted the broadcasting and multimedia industries? What is the purpose of a timeline in video editing software, and how does it facilitate the organization and arrangement of video clips? Explain the process of converting RGB to YCbCr. How are the original RGB values transformed into luminance and chrominance components? [5+5+3+2+5]
4. What is the primary function of a router in a network? Compare unicast, multicast, and broadcast communication in multimedia networking. In what scenarios is each communication mode most suitable? Analyze the challenges associated with managing and maintaining a Wide Area Network (WAN) compared to a Local Area Network (LAN). Analyze the advantages and disadvantages of a hybrid network topology. How does combining different topologies address specific networking requirements? Define bandwidth in the context of networking. How does sufficient bandwidth contribute to smooth multimedia streaming? [(2+4)+4+6+(2+2)=20]
5. Explain the concept of Hypertext Transfer Protocol (HTTP) and its significance in web communication. How does it facilitate the transfer of multimedia content on the internet? Define the concept of hypermedia in the context of the WWW. How does hypermedia contribute to the interconnected and interactive nature of multimedia content? Analyze the impact of social media on multimedia content sharing and consumption on the web . Discuss the importance of security in multimedia systems. What are the common threats and vulnerabilities associated with multimedia content, and how can they be mitigated? [6+4+3+7=20]

6. What is authoring tool and Mention two popular authoring tools and briefly discuss about the features of authoring tools? Explain the principles of animation, focusing on concepts such as squash and stretch, anticipation, and follow-through. Compare popular formats such as JPEG, PNG, and GIF in terms of their features, use cases, and quality. Discuss the importance of audio sampling rate in multimedia. How does a higher sampling rate contribute to the fidelity of audio reproduction? [(2+3)+6+6+3=20]
7. Compare lossy and lossless data compression. Discuss the importance of compression techniques in multimedia systems. Analyze the similarities and differences between Huffman coding and LZW compression algorithms. How do they approach the task of data compression, and in what scenarios is one more advantageous than the other? Explain with suitable example. [4+4+12=20]
8. Describe the significance of HTML lists. Compare ordered (<ol>), unordered (<ul>), and definition (<dl>) lists in HTML with suitable example. Provide an example of a basic HTML table structure using rowspan and colspan. How is hyperlinked text created in HTML? Provide an example of the <a> (anchor) element with attributes. Explain the purpose of the <meta charset="UTF-8"> tag in the <head> section of an HTML document.
[2+4+5+5+4=20]