

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 113852 Roll No.

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B.Tech.

(SEM. VIII) THEORY EXAMINATION 2013-14

MULTIMEDIA SYSTEMS

Time : 3 Hours

Total Marks : 100

Note :- (1) Attempt all questions.

(2) All questions carry equal marks.

1. Attempt any four parts of the following : **(5×4=20)**
- (a) Describe what MIDI is, what its benefits are, and how it is best used in a multimedia project.
 - (b) What are three different technologies used to capture digital images ? How are these three technologies different ?
 - (c) How do staircasing or jaggies occur ? What can be done to prevent this ?
 - (d) What is the difference between lossy and lossless compression ?
 - (e) What are some of the key features found in Macromedia Fireworks, Director and Flash ?
 - (f) What is the difference between analog and digital video ? How do you digitize analog video ?

2. Attempt any **two** parts of the following : (10×2=20)
- (a) Multimedia Database
 - (b) MPEG Standards
 - (c) Silence Compression.
3. Attempt any **four** parts of the following : (5×4=20)
- (a) Describe the techniques of “interlacing” mentioning its merits and demerits.
 - (b) What are dictionary-based compression techniques ? How are they different from other conventional coding schemes ?
 - (c) State and explain the three main properties of a color source that the eye makes of. Hence explain the meaning of the terms “luminance”, “chrominance”, and “color difference” and how the magnitude of each primary color present in the source is derived from these.
 - (d) What is meant by the “color depth” of a monitor ? Does it have any relationship with the amount of display memory in the adapter card ?
 - (e) Explain why I-frames are inserted into the compressed output stream relatively frequently. Hence explain the terms “group of pictures” (GOP) and “prediction span”.
4. Attempt any **four** parts of the following : (5×4=20)
- (a) Discuss the relative advantages of arithmetic coding over Huffman coding. In what way would you consider Huffman algorithm superior to arithmetic coding ?

- (b) Discuss the role of Text in Multimedia. Explain Formatted and Unformatted text.
 - (c) A 15-inch monitor having an aspect ratio 4 : 3 has 1080 pixels along a single horizontal line and a screen refresh rate of 60 Hz. Calculate its horizontal scan rate in kHz, resolution in dpi and dot pitch in mm (1 inch = 2.54 cm).
 - (d) What are some of the different methods used to create animation ? How would you describe each these methods ?
 - (e) What is Quick Time ? What are the advantages of using Quick Time ?
 - (f) Differentiate Bitmap and Vector graphics.
5. Attempt any two parts of the following : (10×2=20)
- (a) You have been assigned to design and produce the audio portions of a multimedia project. The program will be delivered on a CD-ROM, and video clips will take up most of the CD. You have only 50 MB of storage space to store 20 one-minute clips of speech, 10 songs averaging three minutes long and a background sound loop. What sampling rates and depths should you use for the speech, for the music and for the background sound ? Why ? Roughly calculate the file size totals for these specifications and be sure that you end up with less than the 50 MB of storage space allotted. Discuss your reasoning.

- (b) Derive the bit rate that results from the digitization of a 525-line and a 625-line system using the 4 : 2 : 0 digitization format and interlaced scanning. Hence derive the amount of memory required to store a 2-hour movie/video.
- (c) Discuss various Popular Audio and Video file formats.