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B.TECH.
THEORY EXAMINATION (SEM–VIII) 2016-17
MULTIMEDIA SYSTEMS

Time : 3 Hours *Max. Marks : 100*

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Explain the following: **10 x 2 = 20**

(a) What is a pixel?

(b) What are dictionary-based compression techniques?

(c) Explain the term "anti-aliasing".

(d) What are three different technologies used to capture digital images?

(e) What is the difference between lossy and lossless compression?

(f) What is the difference between analog and digital video?

(g) What is MPEG Standards?

(h) What are the advantages of using Quick Time?

(i) Explain the term Multimedia.

(j) Explain the term hypertexts.

SECTION – B

2. Attempt any five parts of the following questions: **5 x 10 = 50**

(a) What factors determine the quality of the sound file? What steps are involved in producing digital audio? Explain briefly.

(b) An audio clip has duration of 8 minutes. The maximum frequency of the sound wave is 15 kHz. This is to be sampled using 8 bits per sample and in stereo mode. Estimate the minimum data rate in KB/sec required playing back the digital file and the audio file size in MB.

(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) Discuss various Popular Audio and Video file formats.

(e) **Differentiate between:-**

(i) Interactive media and hyper media

(ii) Video and animation

(f) Discuss the relative advantages of arithmetic coding over Huffman coding. In what way would you consider Huffman algorithm superior to arithmetic coding.

(g) 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).

(h) Briefly explain why we need to be able to have less than 24-bit color and why this makes for a problem. Generally, what do we need to do to adaptively transform 24-bit color values to 8-bit ones?

SECTION – C

Attempt any two of the following questions: **2 x 15 = 30**

3. What are dictionary-based compression techniques? How are they different from other

conventional coding schemes? Discuss the relative merits and demerits of dictionary-based compression schemes. Discuss the genesis of dictionary-based compression schemes.

4. What is the basic concept of color and also explain the video capturing technique.
5. 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.