

BITS, Pilani – Dubai Campus, Knowledge Village, Dubai.
IV Year First Semester 2004-2005

Degree: B.E. (Hons.) Branch: C.S.E.

TEST I Question Paper

Course No : EA UC473 Course Title: Multimedia Computing

Date: 24, Oct., 2004 Sunday Time: 9 a.m. - 9.50 a.m. Total marks: 20

Data provided are complete. *Closed Book.*

1. Explain the following **Transmission Modes** w.r.t. data stream characteristics
a) ISOCHRONOUS b) SYNCHRONOUS c) ASYNCHRONOUS.
Mention an Example Application in each category. [1.5+1.5]

2. What is the Storage Capacity per image [in KB] for SVGA Video Controller ? [1]

3. What is a SPACE-BALL ? What is its function ? [2]

4. What is FLICKER EFFECT? What is the function of a
DISPLAY REFRESH BUFFER ? [2]

5. Explain the following w.r.t. ANIMATION:
a) FULL EXPLICIT CONTROL b) PROCEDURAL CONTROL
c) Constraint-Based Systems d) ROTOSCOPING e) CLUT [5]

6. Explain the functions performed by components of a MIDI
Synthesizer device. [5]

7.

Find the **AUDIO DATA RATE** in KB/sec. for **CD-DA** for the
following input data:

- 16 BIT Linear Quantization
- 2 channels
- 44100 samples / second for each channel.

What will be the **TIME** required to transmit a **2 minutes** portion of the above
audio data using a Transmission Channel of bit rate **2 Mbps**? [1+1]

Office copy

B-Vijayekumar

BITS, Pilani – Dubai Campus, Knowledge Village, Dubai.

IV Year First Semester 2004-2005

Degree: B.E. (Hons.) Branch: C.S.E.

TEST I Question Paper

Course No : EA UC473 Course Title: Multimedia Computing

Date: 02, Nov., 2004 Tuesday Time: 12.20.- 01.10 noon Total marks: 20

Data provided are complete. *Closed Book*.

1. Explain the following data stream characteristics for continuous media:
 - a) STRONGLY REGULAR STREAM
 - b) WEAKLY REGULAR STREAM
 - c) IRREGULAR DATA STREAM. [3]
2. What is the Storage Capacity per image [in KB] for SVGA Video Controller ? [1]
3. What is a SPACE-BALL ? What is its function ? [2]
4. a) What is FLICKER EFFECT? [1]
b) What is the purpose of CONDITIONING step in Image Recognition? [1]
5.
 - a). Explain the following w.r.t. ANIMATION:
 - i) PROCEDURAL CONTROL
 - ii) ROTOSCOPING iii) CLUT [3]
 - b) Write the equations corresponding to the component division for YUV signal. [2]
6. Explain the functions performed by components of a MIDI Synthesizer device. [5]
7. Find the AUDIO DATA RATE in KB/sec. for CD-DA for the following input data:
 - 16 BIT Linear Quantization
 - 2 channels
 - 44100 samples / second for each channel.What will be the TIME required to transmit a 2 minutes portion of the above audio data using a Transmission Channel of bit rate 2 Mbps? [1+1]

course file

BITS, Pilani – Dubai Campus, Knowledge Village, Dubai.
IV Year First Semester 2004-2005

Degree: B.E. (Hons.) Branch: C.S.E.

TEST II Question Paper

Course No : EA UC473 Course Title: Multimedia Computing

Date: 12, Dec., 2004 Sunday Time: 9.30.- 10.20 am. Total marks: 20

Data provided are complete. OPEN Book.

1. The following character string is to be transmitted using HUFFMAN CODING:

MULTIMEDIAMEDIUMMUDDIMAIMTIMELIME

- Construct the HUFFMAN Coding Tree step by step for the letters present in the above string and determine the number of bits required to code each letter. [5M]
2. Consider the transmission of a message comprising a string of characters. The probabilities of each character is given below:

$$p(A)=0.40 \quad p(C)=0.30 \quad p(T)=0.20 \quad p(F)=0.10$$

Using ARITHMETIC CODING,

- Encode the string FACT
- Decode 0.54102

[5M]

3. Find SSD [sum of squared differences] correlation and SAD [sum of absolute differences] correlation for the following data pertaining to MPEG P-Frames:

MATCH WINDOW [macroblock]	SEARCH WINDOW
7 9 8	6 10 9
5 4 6	4 5 7
9 8 2	10 7 1

4. Answer the following w.r.t. JPEG: [3M]
- why is ZIG-ZAG SCAN used? [1M]
 - What is the significance of DC coefficients? [0.5M]
 - A ----- has at most ten data units. [0.5]
5. Distinguish between Constant Linear Velocity (CLV) and Constant Angular velocity w.r.t. CD-ROM. [2M]

6. Fill in the blanks:

CD-WO allows the user to _____ once to a compact disk and afterwards to _____ many times. [1M]

7. The capacity for CD-DA is given as 750 MB and the Audio Data Rate is given as 1411200 bits / sec. What is the PLAY TIME for the above CD-DA in hours and minutes? [1M]

8. What is the main advantage of CD-ROM Extended Architecture? [1M]

Course file