Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
End Semester Examination August/September 2014
CST 363-2 Multimedia and Hypermedia Technology

Uva Wellassa University

Answer all the questions
Number of questions: Five (05)
Time allocation: Two (2) hours
Mark allocation: 100 mark

1.

a.

i. What is multimedia? (2 mark)

ii. Differentiate digital media and analog media. (2 mark)

iii. Differentiate time based media and static media. (2 mark)

b.

i. Describe linear and nonlinear media. (2 mark)

ii. What is interactive multimedia? (2 mark)

iii. Describe how the audio/video streaming works? (2 mark)

c. Describe hypermedia and hypertext with examples. (1 mark)

d. What is a multimedia authoring tool and describe authoring concepts? (2 mark)

e. Briefly describe the following terms. (5 mark)

i. Multimedia networking

ii. Multimedia Authoring metaphors

iii. RSS and PODCAST

iv. Stereo and Mono

v. RSTP

2.

a. Define "color theory" and list primary colors. (4 mark)

b. List four (04) color harmony schemes. (4 mark)

c. Differentiate luminance and chrominance. (2 mark)

d. Describe HSL and HSB models. (4 mark)

e.

i. What is the step wise process in digitization? (4 mark)

ii. What is meant by resolution? (2 mark)

3.

a. Explain sampling theorem. (2 mark)

i. List down two (02) types of compression methods. (2 mark)

ii. List two (02) reasons for compression. (2 mark)

b. Suppose a piece of film depicting a moving stagecoach is shot at 24 frames per second, and that the wheels are rotating at such a speed that when the film is projected at 24 frames per second the wheels appear to move backwards. What would you expect to see if the same film is projected at,

i. 12 frames per second? (1 mark)

ii. 48 frames per second? (1 mark)

iii. 60 frames per second? (1 mark)

c. What is the main difference between lossless and lossy compression? (2 mark)

d. What is video broadcasting video standards? List three (03) standards with their characteristics. (6 mark)

e. What is the difference between computer and TV video? (3 mark)

4.

a. Calculate the physical dimension of the following images. (2 mark)

i. 198 x 149 px in 72 dpi display

b. Explain down sampling and up sampling. (2 mark)

c.

i. What is Run Length Encoding (RLE)? (2 mark)

ii. Compress the following data using Run Length Encoding (RLE). (2 mark)

BBBBBBBBBBAAAAAAAAAAAAAAANNMMMMMMMMM

d.

i. What is meant by Huffman Coding? (1 mark)

ii. Draw the tree and determine values for each symbol using the following data. (5 mark)

Symbol	Frequency
A	30
B	12
C	22
D	12
E	9

iii. Encode the following text using the above Huffman tree derived from part (ii).

EAEBAECDEAA

(1 mark)

e.

i. What is meant by animation? (1 mark)

ii. List animation ingredients and explain four (04) of them. (2 mark)

iii. Explain the difference between computer assisted animation and computer generated animation. (2 mark)

5.

a. List steps in 3D animation and briefly explain each step. (2 mark)

b. Describe Bittorrent architecture (2 mark)

c. Explain spatial and temporal redundancy. (2 mark)

i. When may special redundancy reduction be inactive? (2 mark)

ii. When may temporal redundancy reduction be inactive? (2 mark)

d.

i. List two (02) advantages and disadvantages of Musical Instrument Digital Interface (MIDI). (4 mark)

ii. Solve the following questions using the Nyqusit theorem.

a) What sampling rate is needed for a signal with a bandwidth of 10,000Hz (1000 to 14,000Hz)? (2 mark)

b) A signal is sampled. Each sample requires at least 12 levels of precision (0 to +5 and 0 to -5). How many bits should be sent for each sample? (2 mark)

c) Assume that we want to digitize the human voice (the human voice normally contains frequencies from 0 to 40000 Hz.). What is the bit rate, assuming 8 bits per sample? (2 mark)