Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
300 level 2nd Semester Examination – Jan. / Feb. 2016
CST 363-2 Multimedia and Hypermedia Technology

Uva Wellassa University

Instructions to candidates
Duration: Two (02) hours
Number of questions: (04) Four
Mark allocation: 100

1.
   a. What is meant by multimedia & hypermedia technology? (1 mark)
   b. What is Kinematic? (2 mark)
   c. Differentiate the following with examples,
      i. Digital and analog media
      ii. Time based media and static media
      iii. Linear and nonlinear media (6 mark)
   d. What is meant by interactive multimedia? Explain using specific devices. (4 mark)
   e. Describe hypermedia and hypertext with examples. (4 mark)
   f. What is a multimedia authoring tool? (3 mark)
   g. Explain the differences between computers assisted animation and computer generated animation. (5 mark)

2.
   a. Define "color theory" and list primary colours. (6 mark)
   b. List four (04) colour harmony schemes. (4 mark)
   c. Differentiate luminance and chrominance. (6 mark)
   d. Describe HSL and HSB models. (6 mark)
   e. What is meant by resolution? (3 mark)

3.
   a. List steps in 3D animation and briefly explain each step. (2 mark)
   b. Describe Bit torrent architecture (2 mark)
   c. Explain spatial and temporal redundancy. (2 mark)
      i. When may special redundancy reduction be inactive? (3 mark)
      ii. When may temporal redundancy reduction be inactive? (3 mark)
   d. List two (02) advantages and disadvantages of Musical Instrument Digital Interface (MIDI). (4 mark)
   e. Solve the following questions using the Nyquist theorem.
      i. What sampling rate is needed for a signal with a bandwidth of 10,000Hz (1000 to 14,000Hz)? (3 mark)

49

ii. 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?

(3 mark)

iii. Assume that we are required 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?

(3 mark)

4.

a. Explain sampling theorem. (2 mark)

i. Describe down sampling and up sampling. (2 mark)

b. List two (02) types of compression methods and explain reasons for compression.

(2 mark)

c. What is meant by Encoding? (4 mark)

d.

i. What is meant by Run Length Encoding (RLE)? (1 mark)

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

BBBBBBBBBBAAAAAAAAAAAAAAANNMMMMMMMMMB (4 mark)

e.

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

ii. Draw the tree and determine the values for each symbol using the following data.

Symbol	Frequency
A	32
B	12
C	22
D	11
E	9

(6 mark)

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

EAEBAECDEAAAA (3 mark)

Question 04:

1. Answer following questions by considering Figure 01 in Page 4 and **attach Figure 01 to your answer Scripts.**
   a. Mark the followings on Figure 01 itself. *(5 marks)*
      i. All the Spectral colors
      ii. PEE - Point of Equal Energy
      iii. CIE standard of white
      iv. Fully saturated colors
      v. Pure Red, Green and Blue colors (approximately).
   b. What can you say about the straight line if we join two points A and C? *(2 marks)*
   c. What can you say about the triangle ABC in this diagram? *(2 marks)*
   d. What you can say about the straight line which is connecting the boundary of CIE chromaticity diagram and Point of Equal Energy? *(2 marks)*
   e. What are the Chromatic Coefficients of Red Green and Blue for point "C"? *(3 marks)*
   f. Calculate the amounts of Red Green and Blue colors need to be mixed to produce the color in point "C". *(3 marks)*

2. Briefly explain about the RGB color model. *(2 marks)*
3. What is Color Depth? *(2 marks)*
4. In RGB model we are representing the colors as (R,G,B). 1byte is used to represent the R, G and B values.
   What is the hexadecimal representation of following colors according to the RGB model? *(4 marks)*
   i. Black
   ii. White
   iii. Red
   iv. Green
   v. Blue
   vi. Yellow
   vii. Cyan
   viii. Magenta

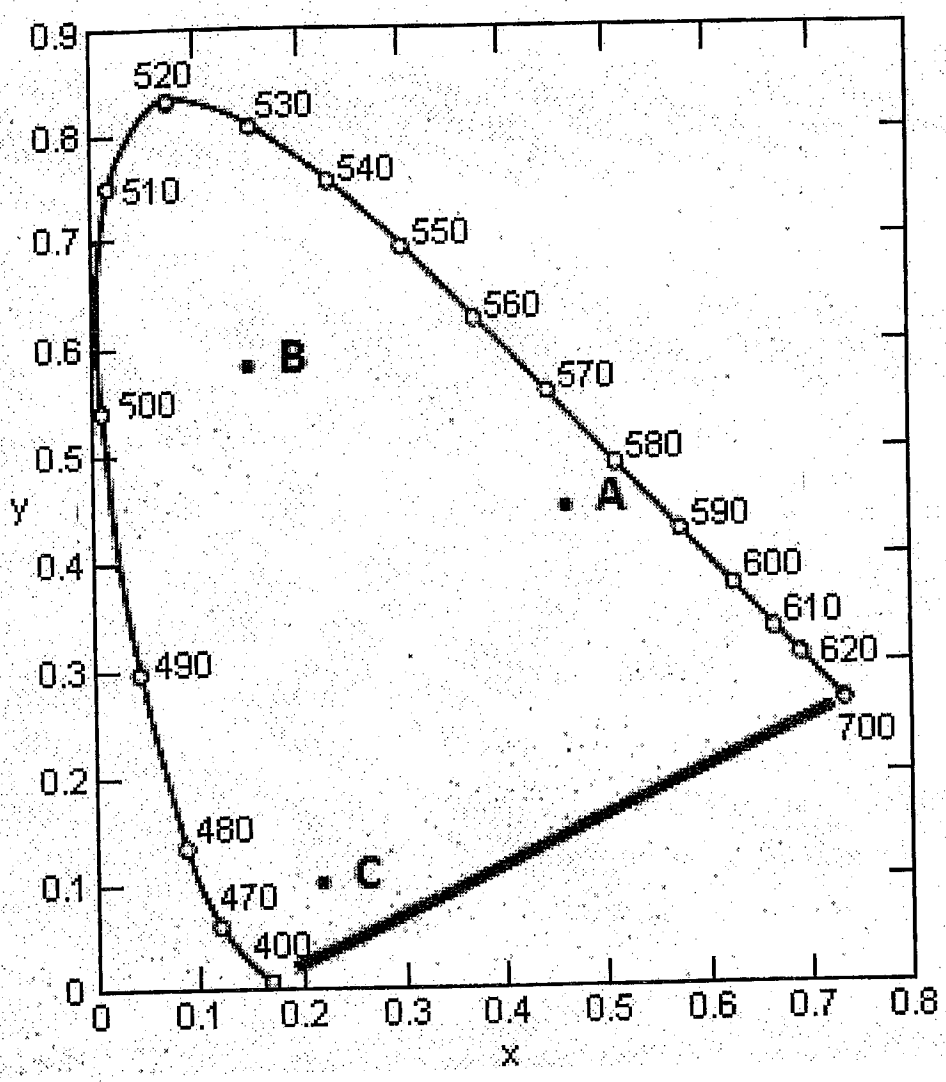

Figure 01: CIE - Chromaticity Diagram