

Mansoura University		Date :18/1/2016
Faculty of Computers		Time: 3Hours.
4 th Year- IS & IT Departments		Total Marks: 60 M
Multimedia Systems Final Exam		

Question 1 [15 M]

1. [7 M] What is the CMYK colour model? Give an application in which this colour model is mostly used and explain the reason. Given a colour represented in CMYK colour space as $C=0.4, M=0.0, Y=0.3, K=0.4$. What is its representation in the RGB colour model?
2. [6 M] What is a colour look-up table and how is it used to represent colour? Give an advantage and a disadvantage of this representation with respect to true Colour. How do you convert from true color to color look up table representation?
3. [2 M] What characteristics of the colour sensory of human visual system can be utilized for the size reduction of colour images and videos?

Question 2 [15 M]

1. [6 M] Dithering is often used when converting greyscale images to monochrome. What is the idea of dithering process? Write the dithering algorithm. By using 2×2 dither matrix, find the binary representation for this block of gray image.

25	130
70	220

2. [5 M] GIF is famous file format for web while SVG is preferable for mobile device. Do they use the same method for image representation? State three major differences between them.
3. [4 M] Audio signals are often sampled at different rates. CD quality audio is sampled at 44.1 kHz rate. If the sample size is 8 bits and duration is 2 minutes. What is the file size for this stereo Audio CD?

Question 3 [15 M]

1. **[8M]:** If you have 2 minutes duration time of video signal transmitted using PAL Standard with the following Parameters: 800 pixels per horizontal line, 4.2.2 chroma sub sampling and 8 bits color depth. Find the following:
 1. Bit rate of the video
 2. Size of the video
 3. Size of the frame
 4. Size of luma and chroma in each frame.
2. **[4 M]:** State Nyquist's Sampling Theorem. What are general considerations affects the selection of the sampling rate in multimedia data?
3. **[3M]:** SQNR is a type of noise in Digital Audio. What is the reason of SQNR. If sample size is 3bits , how much noise is added?

Question 4 [15 M]

A. **[10 M]** Put True or False and Correct the false statement

1. Flickering is occurred in progressive scanning
2. Final cut pro is audio editing software
3. De-interlacing process is occurred when reducing in video size
4. PNG file format support color lookup table
5. Freehand is image editing software
6. Increasing the Number of levels in dithering process increase the number of gray levels
7. HSV is Digital video color model
8. 4:2:0 Creates half of the data required in 4:4:4
9. NTSC frame takes 30milli seconds to be displayed
10. Higher video bit rate accommodate higher image quality

B. **[5 M]:** Define The following Processes

1. Sampling
2. Thresholding
3. Auto-tracing
4. Posterization
5. Quantization

End of Exam,
Dr Sameh

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