



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2018 – 3rd Year Examination – Semester 5

IT5405: Fundamentals of Multimedia

20th May, 2018

(TWO HOURS)

To be completed by the candidate

BIT Examination Index No:

Important Instructions:

- The duration of the paper is **2 (two) hour**.
- The medium of instruction and questions is English.
- This paper has **4 questions** and **19 pages**.
- **Answer all questions.** All questions **carry equal** marks.
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.
- Calculators are **not** allowed.

Questions Answered

Indicate by a cross (×), (e.g. ☒) the numbers of the questions answered.

	Question numbers			
	1	2	3	
To be completed by the candidate by marking a cross (×).				
To be completed by the examiners:				

Q1. Identify whether the following statements [i] to [xv] are correct or incorrect. Justify your answer if it is incorrect.

[i] GIF, or Graphic Interchange Format, is a file extension for an often animated raster graphics file not particularly good for photographic images. `

☐

Correct

☐

Incorrect

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(01 Mark)

[ii] A PNG file is an image file stored in the Portable Network Graphic format. It contains a bitmap of 256 indexed colors and uses lossless compression.

☐

Correct

☐

Incorrect

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(01 Mark)

[iii] "Verdana" is a sans-serif typeface designed by Matthew Carter for Microsoft Corporation.

☐

Correct

☐

Incorrect

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(01 Mark)

[iv] S-Video technology separates the luminance signal onto one wire and the color signals onto another two wires.

☐

Correct

☐

Incorrect

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(1.5 Mark)

[v] You can directly transfer digital information back and forth between a DV camcorder and your computer in real time. The ports and cables that enable this direct transfer use the IEEE 1394 standard.

☐

Correct

☐

Incorrect

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(1.5 Mark)

[vi] The RGB color model is additive in that the three light beams are added together, and their light spectra add, wavelength for wavelength, to make the final color's spectrum. A 24 bit RGB color image that is 2048 pixels in width and 1536 pixels in height will require 3.1 Mega Bytes of storage.

☐

Correct

☐

Incorrect

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(01 Mark)

[vii] **Serial Digital Interface (SDI)** is a standard for digital video and audio transmission over coaxial cable. The most common data speed for SDI is 270 megabits per second (Mbps).

☐

Correct

☐

Incorrect

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(02 Marks)

[viii] **MP4** is a file format created by the Moving Picture Experts Group (MPEG) as a multimedia container format designed to store audiovisual data. The MP4 is largely replacing the MP3 file format.

☐

Correct

☐

Incorrect

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(02 Marks)

[ix] **Joint Photographic Expert Group (JPEG)** format is used for image compression and provide some indication of the full image for the reader to look at without having to wait for the entire image to download.

☐

Correct

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Incorrect

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(02 Marks)

[x] HDMI (High-Definition Multimedia Interface) is a compact audio/video interface for transferring compressed video data and compressed digital audio data using Y'C_bC_r with 4:2:2 or 4:2:0 sub-sampling from a HDMI-compliant source device.

☐

Correct

☐

Incorrect

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(02 Marks)

[xi] Blu-ray supports 1080i resolution. A single-layer Blu-ray disc can hold 25GB of data, a dramatic improvement over DVD's 4.7GB.

☐

Correct

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Incorrect

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(02 Marks)

[xii] MPEG-1 Audio Layer III, more commonly referred to as MP3, is an encoding format for digital audio which uses a form of lossy data compression.

☐

Correct

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Incorrect

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(02 Marks)

[xiii] Component video Interfaces have three RCA cables: one green, one red and one blue. Component video is an analog format that carries visual data only, meaning audio cables are still required.

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Correct

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Incorrect

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(02 Marks)

- [xiv] **Composite video** is an analog video transmission that combines chrominance (color) and luminance (brightness) information into a single analog video transmission.

☐

Correct

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Incorrect

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(02 Marks)

- [xv] **JPEG** is a lossy image compression method used only for color images. It employs a transform coding method using DCT (Discrete Cosine Transform).

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Correct

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Incorrect

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(02 Marks)

Q2.

- [i] Symbols in Adobe Flash allow you to quickly build and modify your web site. There are **three (03)** different types of symbols. Name them and explain briefly the usage of each symbol type separately.

(03 Marks)

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[ii] List **three (03)** distinct models of color used in multimedia and explain the use of each color model in different multimedia industries.

(06 Marks)

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[iii] Write down **three (03)** major Scripts in South, South East and East Asia and explain briefly the common characteristics of each of them.

(06 Marks)

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[iv] **Chrominance Sampling** and **Chrominance Sub-sampling** are the main keywords used in the video industry in respect to the color level and the quality of a video. Describe the 4:2:2 and 4:1:1 sampling methods used in video technology.

(06 Marks)

ANSWER IN THIS BOX**4:2:2**

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4:1:1

- [v] ZWJ (Zero with Joiner - U+200D) and ZWNJ (Zero with Non Joiner - U+200C) are special Unicode code point introduced to render correctly with Indic scripts. Write down the reason to introduce these code points.

(04 Marks)

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Q3.

- [i] Different colour models are often used in different applications. What is the CMYK colour model? Give an application in which this colour model is mostly used and explain the reason. (03 Marks)

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[ii] Differentiate between the PNG, JPG, TIFF and TARGA image file formats mentioning where each is used.

(08 Marks)

ANSWER IN THIS BOX

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JPG

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<p>TIFF</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>TARGA.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

[iii] Describe three storage media types for digital video media available in the professional and consumer market today.

(06 Marks)

<p><u>ANSWER IN THIS BOX</u></p> <p>1.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

[illegible]

[iv] What is meant by Characters, Glyphs, Font and Styles in Typography? Explain with examples.

(04 Marks)

ANSWER IN THIS BOX

Characters :

[illegible]

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Fonts:

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Styles:

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[v] Describe in brief the **four** (04) major text file formats used in text processing software.

(04 Marks)

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Q4.

[i] Differentiate between Lossy compression and Lossless compression used in Digital Data.

(07Marks)

ANSWER IN THIS BOXThis image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

- [ii] “**Color models** used in the video industry are different from those used in the graphics industry”. Justify the above statement.

(06Marks)

ANSWER IN THIS BOX

[iii] What is meant by *keyframing* and *tweening* in Adobe Flash?

(06Marks)

ANSWER IN THIS BOX

keyframing

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[iv] Explain the difference between the **three (03)** major TV broadcasting standards and discuss why these three standards exist.

(06Marks)

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