

MACHAKOS UNIVERSITY

**SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY
BACHELOR OF INFORMATION TECHNOLOGY
SECOND YEAR FIRST SEMESTER
SIT 210: MULTIMEDIA SYSTEMS**

DATE:

TIME:

Instruction: Answer Question ONE and any other TWO Questions

Question 1 (30 Marks)

- a) Describe the distinction between GIF and JPEG image formats. **(4 Marks)**
- b) Multimedia presentation deals with the way in which the multimedia data is finally presented to the user. What are the key issues in MM presentation? **(6 Marks)**
- c) Explain characteristics of Multimedia systems. **(4 Marks)**
- d) Explain three technical parameters that affect the design and delivery of multimedia applications. **(6 Marks)**
- e) What is compression? Using examples differentiate between lossy and lossless modes of media compression. **(6 Marks)**
- f) What processes give rise to the lossy nature of JPEG/MPEG video compression? **(4 Marks)**

Question 2 (20 Marks)

- a) Explain four sources of redundancy in multimedia data. **(8 Marks)**
- b) Explain two psychological phenomena that have been exploited in MPEG audio compression. **(6 Marks)**
- c) Motion JPEG (or M-JPEG) is a video format that uses JPEG picture compression for each frame of the video. Why is M-JPEG not widely used as a video compression standard? **(2 Marks)**
- d) Explain two goals of multimedia compression. **(4 Marks)**

Question 3 (20 Marks)

- a) Discuss the multimedia revolution in the arts, entertainment, education, business and social networks. **(10 Marks)**
- b) Explain the following image techniques
 - i. Dithering **(2 Marks)**
 - ii. Anti-Aliasing **(2 Marks)**
- c) “Colour is a vital component of multimedia. Colour management is both a subjective and a technical exercise”. Explain. **(4 Marks)**
- d) Distinguish between vector and Bitmap images. **(2 Marks)**

Question 4 (20 Marks)

- a) Describe the digitization process. You can use a diagram. **(6 Marks)**
- b) Explain why compressed video stream are sensitive to transmission errors **(4 Marks)**
- c) Describe three key differences between web-based multimedia and CD-based multimedia. **(6 Marks)**

- d) Text is described as the basic element of multimedia. Which three elements of text are needed to make an effective multimedia program? **(4 Marks)**

Question 5 (20 Marks)

- a) Define the terms below and explain the influence each has on multimedia experience:
- i. Image resolution **(2 Marks)**
 - ii. Color depth **(2 Marks)**
 - iii. Frame rate **(2 Marks)**
- b) Distinguish between MPEG-1 and MPEG-2 **(2 Marks)**
- c) Media Streaming is the delivery of audio, video and other multimedia content across the internet using streaming media servers.
- Describe three disadvantages of streaming. **(6 Marks)**
- d) Explain three main tasks of media players. **(6 Marks)**