(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS 2020/2021 ACADEMIC YEAR

FORTH YEAR SUPPLEMENTARY/SPECIAL EXAMINATIONS

BACHELOR OF COMPUTER SCIENCE/SIK

COURSE CODE: BCS 479

COURSE TITLE: MULTIMEDIA TECHNOLOGY

DATE: MONDAY 01-08-2022 **TIME:** 2.00P.m. – 4.00P.m.

INSTRUCTIONS TO CANDIDATES

Question ONE (1) and Any OTHER 2 questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

Q1 a) What is meant by the terms *Multimedia* and *Hypermedia?*Distinguish between these two concepts. 4marks

b) Explain what is Encryption, list 2 encryption techniques 4marks

c) The differences between bitmap and vector-drawn images from the creation of the images and the file size, 4marks

d) Discuss why compression in multimedia storage and transmission is necessary 4marks

e) i)Show how you would use *Huffman coding to* encode the following set of tokens: `BABACACADADABBCBABEBEDDABEEEBB` 7marks

ii) How many bits are needed to transfer this coded message and what is its Entropy? 7marks

Q2 a) Discuss 4 uses of Multimedia 4marks

b) What is meant by the terms static media and dynamic media ? Give one examples of each type of media 6marks

c)) i) Apply *run length encoding* to compress following stream of alphabetical tokens: ABBAARNOOGOODEEEHHHHH 7marks

ii)Comment on the *efficiency* of RLE compression on the above token stream. 3marks

3 a) Distinguish between lossy and lossless data compression 4marks

b) What issues of functionality need to be provided in order to effectively use a wide variety of media in Multimedia applications? Your answer should briefly address how such functionality can facilitate in general Multimedia applications 6marks

c) i)Describe the *LZW* algorithm for encoding an input sequence, 4marks

ii) Given an initial dictionary:

Index	Entry
1	*a*
2	*b*
3	*h*
4	*i*
5	*s*
6	

and an output of an *LZW encoder* is:

6 3 4 5 1 3 1 6 2 9 11 16

decode the above sequence (which is not intended to represent meaningful English. 6marks

Q4 a) i) Explain the use of hyperlinks in ultimedia
3marks

ii) In Processing and transmission of a multimedia define data rate, 3marks

b) Draw a block diagram of a audio digitizing process, 8marks

c) Discuss 3 Basic requirements of a multimedia computer Operating System 6marks

Q5. a) i) Briefly explain how the *human visual system* senses *colour*. How is *colour exploited* in the *compression* of multimedia *graphics*, *images* and *video*? 3marks

ii) List **three** distinct of *colour* used in multimedia. 6marks

(b) Explain the Hardware that creates sound from *models* a mathematical representation 2marks

(c) Explain 2 sources of images in multimedia 6marks