FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

DEPARTMENT OF INFORMATION AND MEDIA TECHNOLOGY

FIRST SEMESTER 2016/2017 EXAMINATION

COURSE CODE:	CIT413
COURSE TITLE:	DATA COMPRESSION
CREDIT UNITS:	2
TIME ALLOWED:	**2HRS**
COURSE LECTURER(S):	MRS. F.J. BABAKANO
NUMBER OF QUESTIONS:	9
NUMBER OF PAGES:	3 (INCLUDING THIS PAGE)

INSTRUCTIONS

- Answer all questions
- Do **not** use red pen
- Please use a clear handwriting
- This exam is closed book, closed notes, closed laptop and closed cell phone
- Please use non-programmable calculators only

1. a. What is data compression and why do we compress data? 4mrks

   b Explain briefly the meanings of *lossless* compression and *lossy* compression. For each type of compression, give an example of an application, explaining why it is appropriate. 4mrks

2. Describe briefly how each of the two classes of lossless compression algorithms, namely the *adaptive* and the *non-adaptive*, works in its model. Illustrate each with an appropriate example. 6 mrks

3. Determine whether the following codes for {A, B, C, D} are *uniquely decodable*. Give your reasons for each case.

   (a) {0, 10, 101, 0101}

   (b) {000, 001, 010, 011}

   (c) {00, 010, 011, 1}

   (d) {0, 001, 10, 010} 8 mrks

4. Differentiate between dictionary based compression and statistical based compressions 4mrks

5. Compare and contrast between arithmetic encoding and Huffman encoding. 4mrks