



## **MASENO UNIVERSITY**

### **UNIVERSITY EXAMINATIONS 2016/2017**

**FOURTH YEAR SECOND SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN INFORMATION  
TECHNOLOGY**

### **CITY CAMPUS**

### **CIT 418: AUTHENTICATION PROTOCOLS AND BIOMETRICS**

Date: 1<sup>st</sup> August, 2017

Time: 5.30 - 8.30 pm

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#### **INSTRUCTIONS:**

- Answer ALL question in SECTION A and any other TWO from SECTION B
- Write your registration number on all sheets of the answer book used.
- Use a NEW PAGE FOR EVERY QUESTION attempted, and indicate number on the space provided on the page of the answer sheet.
- Fasten together all loose answer sheets used.
- No mobile phones in the examination room.

MASENO UNIVERSITY

ISO 9001:2008 CERTIFIED



**QUESTION ONE [30 Marks]**

- a) Using fingerprint identification differentiate between authentication and identification [4 Marks]
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- b) In the development of biometric identification systems, physical and behavioural characteristics for recognition are required. Describe four attributes that characterize a biometric [8 Marks]
- c) Differentiate between positive enrolment and negative enrolment. [4 Marks]
- d) Using a diagram describe the biometrics authentication process [6 Marks]
- e) The methods of determining authentication are described as factors. Identify and explain these three factors [6 Marks]
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- f) State at least two types of biometrics [2 Marks]

**SECTION B**

**ANSWER ANY TWO QUESTIONS**

**QUESTION TWO [20 Marks]**

- a) After generation, the template needs to be stored. Discuss three possible options for biometric data storage repositories. [6 Marks]
- b) There are some key business and user convenience drivers for the implementation of biometric systems however there are some disadvantages and concerns with the implementation of biometric systems. Discuss these advantages and constraints [10 Marks]
- c) In what regard are behavioural characteristics more vulnerable to changes [4 Marks]

**QUESTION THREE [20 Marks]**

- a) You have been contracted as a biometrics expert by a client who wants to implement a biometrics systems application to give him advice on which biometric systems is preferable for implementation. Discuss six key factors used in the selection of a biometric device installation. [12 Marks]
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- b) Distinguish between genotypic and phenotypic characteristics in biometrics [4 Marks]

- c) When biometrics systems are used for identification or authentication there are four possible outcomes. Identify these outcomes [4 Marks]

**QUESTION FOUR [20 Marks]**

- a) In authentication, possession of a chip card combined with biometric methods may further increase reliability. Discuss at least five advantages of using a combination of chip card and biometrics. [5 Marks]
- b) The use of biometrics raises various public concerns over privacy of biometric data. Discuss at least five privacy issues raised regarding biometrics. [5 Marks]
- c) Voice Scan systems can be categorized into three different types depending on how the voice scan system works. Identify these three categories [6 Marks]
- d) Facial recognition is not sufficiently accurate to perform large identification achieved by fingerprints or iris and are hindered by the several problems when determining the identity of two photographs of the same person. Discuss atleast four of these problems [4 Marks]

**QUESTION FIVE [20 Marks]**

- a) Ideally some form of “liveness” test should also be incorporated in systems to minimise or defeat attempts to circumvent or compromise the system. Specific liveness detection measures vary from technology to technology but all liveness detection techniques fall into one of three categories. Discuss these three categories using relevant illustrations. [9 Marks]
- b) As any other system and technology the biometric technology has its vulnerabilities. As a security expert in biometrics you have been requested to prepare a presentation on attacks on biometric authentication system for your colleagues. Describe three types of attacks that you shall include in your presentation [9 Marks]
- c) State four methods employed by facial recognition vendors to identify and verify subjects [2 Marks]

END OF EXAM