The University of Nottingham

SCHOOL OF COMPUTER SCIENCE

A LEVEL 3 MODULE, SPRING SEMESTER 2010-2011

COMPUTER SECURITY

Time allowed ONE AND A HALF hours

Candidates may complete the front cover of their answer book and sign their desk card but must NOT write anything else until the start of the examination period is announced

Candidates must NOT start writing their answers until told to do so

Answer Question ONE (compulsory) and TWO other questions

Marks available for sections of questions are shown in brackets in the right-hand margin

Only silent, self-contained calculators with a single-line display are permitted in this examination.

Dictionaries are not allowed with one exception. Those whose first language is not English may use a dictionary to translate between that language and English provided that neither language is the subject of this examination.

No electronic devices capable of storing and retrieving text, including electronic dictionaries, may be used.

DO NOT turn your examination paper over until instructed to do so

1. Question One – COMPULSORY   (20 marks)

a) Describe and compare at least 3 different Authentication mechanisms.

(6)

b) What is the difference between a subject and an object in access control?

(4)

c) What are the main security problems with GSM?

(6)

d) Explain how firewalls can improve network security and what their main limitations are.

(4)

2. Question Two (20 marks)

a). In GMS networks what is TSMI, and what can it be used for?

(3)

b) What are IMSI catchers?

(2)

c) What is "password salting"?

(3)

d) What security mechanisms and vulnerabilities does Bluetooth have?

(6)

e) What is UMTS? Describe its security architecture.

(6)

3. Question Three   (20 marks)

a) Describe information hiding technique.

(3)

b) Describe *Single Sign On.*

(2)

c) Describe and compare WEP, WPA and WPA2 security architectures.

(10)

d) Explain how Denial of Service can be achieved by using TCP SYN flood.

(5)

4. Question Four   (20 marks)

a) Describe Chip & PIN Relay Attack.

(5)

b) What are the security issues with RFID technology.

(4)

c) Describe the difference between active and passive network attacks and give examples.

(5)

d) Describe the two major security mechanisms that *IP Security* is based on.

(6)

END OF EXAM