UNIVERSITI TUN HUSSEIN ONN MALAYSIA

Universiti Tun Hussein Onn Malaysia

FINAL EXAMINATION
SEMESTER II
SESSION 2014/2015

COURSE NAME	:	SOFTWARE ENGINEERING SECURITY
COURSE CODE	:	BIE 33003
PROGRAMME	:	3 BIP
EXAMINATION DATE	:	JUNE 2015/ JULY 2015
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS.

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Q1 (a) Describe risk management activities that can be applied during software development lifecycle (SDLC).

(10 marks)

(b) State **TWO (2)** design guidelines that can be used for security engineering.

(4 marks)

(c) Suggest **THREE (3)** techniques to ensure the secure software development.

(6 marks)

Q2 (a) Define Database Security.

(2 marks)

(b) Explain **FOUR (4)** security requirements for a database system.

(8 marks)

(c) Questions **Q2(c)(i)** and **Q2(c)(ii)** are based on Table 1.

Table 1: Lecturer table

Lecturer Name	Lecturer Course	Lecturer Address	Lecturer Phone No	Lecturer Salary	Lecturer Position
Tuah	EE-3	56, KDR	3675	7500	DS51
Jebat	CS-6	78, TKI	4567	6700	DS45
Kasturi	IT-5	45, PRD	8456	8900	DS52
Tuah	EE-7	56, KDR	3675	7500	DS51

(i) Describe **FOUR (4)** problems that are likely to occur when designing database table as shown in Table 1.

(6 marks)

(ii) Reconstruct Table 1 in a way that fixes the problems answered in **Q2(c)(i)**.

(4 marks)

Q3   (a)   As a security engineer you have to convince your organization on the importance of Intrusion Detection System and Intrusion Protection System. Debate at least **THREE (3)** reasons why both systems are important to be implemented in your organization.

(6 marks)

(b)   Outline **THREE (3)** design goals for a firewall.

(6 marks)

(c)   Questions **Q3(c)(i)** and **Q3(c)(ii)** are based on Figure **Q3(c)**.

```
One of the attacks that can be made on packet
filtering firewalls is an IP address spoofing attack.
Assume that an advanced idealized firewall can be
developed to overcome the IP address spoofing attack
in future.
```

FIGURE Q3(c)

(i)   Identify **TWO (2)** other related attacks that might occur.

(4 marks)

(ii)   Suggest the countermeasure that can be used to accomodate the type of attacks answered in **Q(c)(i)**.

(4 marks)

Q4   Questions **Q4(a)** - **Q4(e)** are based on scenario given in Figure **Q4(a)** and use case diagram in Figure **Q4(b)**.

```
The Campus Housing Service helps students find apartments. Owners
of apartments fill in information forms about rental units they
have available (eg location, number of bedrooms, monthly rent),
which are entered into a database. Students can search through
this database via the Web to find apartments that meet their
needs. They then contact the apartment owners directly to see the
apartment and possibly rent it. Apartment owners call the service
to delete their listing when they have rented their apartment(s).
```

FIGURE Q4(a)

CONFIDENTIAL
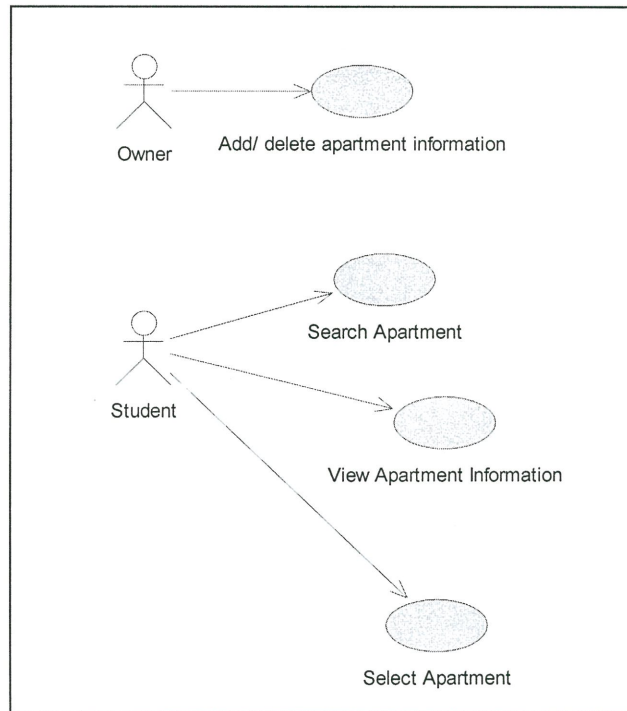
FIGURE Q4(b)

(a)   Outline the critical assets for the Housing system.

(4 marks)

(b)   Determine security goals for the assets listed in **Q4(a).**

(12 marks)

(c)   Determine threats using misuse cases.

(8 marks)

(d)   Analyze risks for each threat determined in **Q4(c).**

(8 marks)

(e)   Produce security requirements for each threat determined in **Q4(c).**

(8 marks)

- END OF QUESTION-