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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2018/2019**

COURSE NAME : SYSTEM SECURITY
COURSE CODE : BIS 33503
PROGRAMME CODE : BIS
EXAMINATION DATE : DECEMBER 2018 / JANUARY 2019
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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- Q1** (a) List **THREE (3)** examples of open source databases. (3 marks)
- (b) List **THREE (3)** examples of commercial databases. (3 marks)
- (c) Explain why many companies are migrating from MySQL to other databases since 2008? (2 marks)
- (d) List **FOUR (4)** types of Not Only SQL (NoSQL) database. (4 marks)
- (e) Explain why big companies such as Amazon is using Not Only SQL (NoSQL) database instead of relational database? (2 marks)
- Q2** (a) Outline **TWO (2)** Hadoop components? (4 marks)
- (b) Using **ONE (1)** example from commercial database, demonstrate how high availability is achieved. (6 marks)
- (c) Differentiate the functionality of Supervisory Control and Data Acquisition (SCADA) and Cyber-Physical System (CPS). (6 marks)
- Q3** (a) Sketch a Fog Computing architecture. (6 marks)
- (b) Identify **TWO (2)** security mechanisms / mitigations for first attack in the OWASP Top 10 2017 list. (4 marks)

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Q4 International Secured Data Sdn Bhd (ISDSB) is a company specializing in providing database and security solution to customers. As an information security officer in this company, you are required to implement the following tasks.

- (a) Identify **FOUR (4)** examples of attack on ISDSB database. (4 marks)
- (b) Suggest **TWO (2)** security solutions for attacks stated in **Q4(a)**. (4 marks)
- (c) . Identify **TWO (2)** OWASP Secure Coding checklist related to database security. (4 marks)
- (d) Propose a database access security model using Mandatory Access Control (MAC). You may use either READ UP, WRITE DOWN or NO READ UP, NO WRITE DOWN model. (4 marks)
- (e) Compare between the usage of blockchain used in digital coin and IoT implementation. (4 marks)



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Q5 International IoT Sdn Bhd (IISB) is a company specializing in providing IoT solution to customers. As an information security officer in this company, you are required to implement the following tasks.

- (a) Suggest **THREE (3)** examples of IoT implementations in a smart city.
(6 marks)

- (b) Design a threat model for IoT using STRIDE for smart city by considering at least **FIVE (5)** threats.
(10 marks)

- (c) Suggest **TWO (2)** security mechanisms / mitigations to protect IoT devices in smart city.
(4 marks)

Q6 CPS Security Solution Sdn Bhd (CSSSB) is a company specializing in Cyber-Physical System (CPS) for a critical infrastructure. As an information security officer, you are given a task to recommend security solution on a CPS environment for a client in a Power Plant business.

Provide **FIVE (5)** security solutions for this infrastructure. Justify your answer.
(20 marks)

- END OF QUESTION -

