



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
SEPTEMBER 2013 SESSION**

SUBJECT CODE	:	FSB38204
SUBJECT TITLE	:	SOFTWARE ENGINEERING
LEVEL	:	BACHELOR
TIME / DURATION	:	3 HOURS
DATE	:	

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
2. This question paper is printed on both sides of the paper.
3. Please write your answers on the answer booklet provided.
4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
5. This question paper consists of **ONE (1) section, Section A**. Please, answer five (5) questions only.
6. Answer all questions in English.

THERE ARE 4 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 100 marks)**INSTRUCTION: Answer five (5) questions only.****Please use the answer booklet provided.****Question 1**

- (a) Define the term software engineering. State two (2) types of software products.
(5 marks)
- (b) Determine the type of application for the following statements.
- i. There are application systems that run on a local computer, such as a Personal Computer, PC. They include all necessary functionality and do not need to be connected to a network.
 - ii. These are software control systems that control and manage hardware devices.
 - iii. These are systems that are developed by scientists and engineers to model physical processes or situations, which include many, separate, interacting objects.
- (3 marks)
- (c) List four (4) attributes that all professional software should have.
(2 marks)
- (d) Sketch the software process model called incremental developmental. This approach interleaves the activities of specification, development and validation. The system is developed as a series of versions (increments), with each version adding functionality to the previous version.
(5 marks)
- (e) Draw Robot Simulator UML class diagram that shows two classes; RobotSimulator and Robot. Give two (2) example of attributes and operations of Robot object.
(5 marks)

Question 2

- (a) Discuss five (5) principal stages of the waterfall model that consists of requirements definition; system and software design; implementation and unit testing; integration and system testing; and operation and maintenance.

(10 marks)

- (b) Translate the following sentences into use cases for the Patient Management System (PMS).

The actors involved in an interaction are called *OutPatient* and *DocSpecialize*. *View Record* and *Edit Record* are classes of interaction that link to the actor, *DocSpecialize*. *CheckUp* is class of interaction that link to the actor, *OutPatient*.

(5 marks)

- (c) Explain why systems developed as prototypes should not normally be used as production systems.

(5 marks)

Question 3

You are required to develop simulation on Students Attendance System using Fingerprint Technology (SASFT) for Universiti Kuala Lumpur Malaysia France Institute (UniKL MFI). SASFT uses fingerprint technology to authenticate every student by using their fingerprint in order to get an accurate record. The fingerprint technology is cheaper and easier to implement compared to other biometrics technology. The fingerprint only authenticates the validated student. SASFT with the fingerprint features can make the system secure because no student can record their attendance except to be authenticated by the system.

- (a) As a software manager, you have to interact with stakeholders through interviews and observation in order to gather information about required system and existing, and distilling the user and system requirements from this information. Identify four (4) system stakeholders for the SASFT.

(4 marks)

- (b) As a software manager, you are required to prepare Software Requirement Specification (SRS) document to develop the simulation on SASFT. The SRS document shall contains the following information :

- i. Introduction
- ii. User requirements definition
- iii. System requirements specification
- iv. System architecture

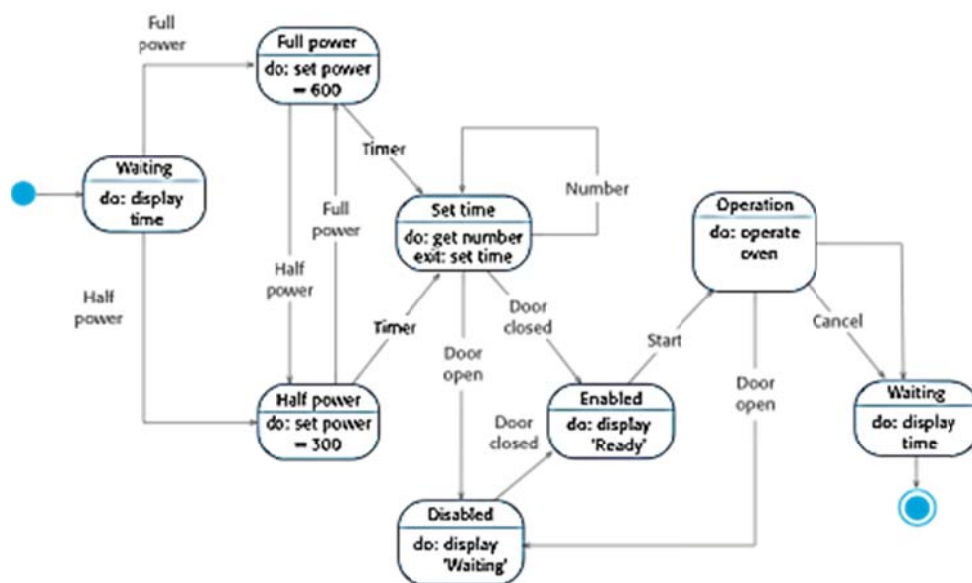
(16 marks)

Question 4

- (a) The Mental Health Care-Patient Management System (MHC-PMS) is an information system that maintains information about patients suffering from mental health problems and the treatments that they have received. You are required to propose a use cases in the MHC-PMS. The MHC-PMS is involving the role 'Medical Receptionist' where the actor is able to do registration, unregister, view information, transfer data and contact patient.

(6 marks)

- (b) Identify five (5) states and stimuli for the microwave oven based on state diagram of a microwave oven shown in Figure 1. Use a tabular description of each state and describe how the stimuli that force state transitions.



(10 marks)

Figure 1 : State diagram of a microwave oven

- (c) List and explain three (3) UML diagram types that can be used to model language for object-oriented modeling.

(4 marks)

Question 5

- (a) List and explain two (2) distinct goals of testing process.

(4 marks)

- (b) State two (2) advantages of software inspection over testing.

(4 marks)

- (c) Explain the use of architectural models.

(4 marks)

- (d) Sketch the architecture of a packing robot control system.

(5 marks)

- (e) State three (3) architecture of system characteristics which usually depend on the non-functional system requirements.

(3 marks)

Question 6

- (a) Discuss the differences between generic software product development and custom software development.

(4 marks)

- (b) State three (3) software engineering code of ethics and professional practice that have been published by IEEE/ACM 1999.

(3 marks)

- (c) Sketch a generic layered architecture that consists of four (4) layers.

(4 marks)

- (d) Explain the term of web server, application server and database server.

(3 marks)

- (e) Give three (3) reasons why developer team should do architectural design before the requirements specification is completed.

(6 marks)

END OF QUESTIONS