



UNIVERSITY OF RUHUNA

Faculty of Engineering

Mid-Semester ⁶ Examination in Engineering: November 2014

Module Number: EE6224

Module Name: Software Projects

[Two Hours]

[Answer all questions, Q4 carries 10 marks, Q1, 2, 3, 5 carry 7.5 marks each

Q1

- a) What are the fundamental principles of Object Oriented Programming? [2 marks]
- b) Describe three access modifiers in Object Oriented Programming. [2.5 marks]
- c) Describe generalization using a real world application. [3 marks]

Q2

- a) Describe the phases of software development lifecycle. [2 marks]
- b) What is waterfall software development approach? [2.5 marks]
- c) List the problems associate with the waterfall approach. [1.5 marks]
- d) Compare iterative development vs waterfall approach. [1.5 marks]

Q3

- a) Describe difference between aggregation and composition relationships in UML class diagram. [1.5 marks]
- b) Define the following terms using 1-3 sentences.
 - i. Swimlane [1.5 marks]
 - ii. Class Diagram [1.5 marks]
 - iii. Sequence Diagram [1.5 marks]
 - iv. Activity Diagram [1.5 marks]

Q4.

a) Select the most suitable answer among the given answers.

i. What defines that how many instances of one object class can be associated with one instance of another object class?

- A) Associativity
- B) Multiplicity
- C) Relationship
- D) Inheritance
- E) None of the above

[1 marks]

ii. Diagrams which depict the system's structure by showing its classes (that is, system is composed of) and the relationships between those classes are known as

- A) use case diagrams.
- B) class diagrams.
- C) object diagrams.
- D) sequence diagrams.
- E) none of the above.

[1 marks]

iii. Which type of class relationship can be described as "is a"?

- A) Generalization/Specialization
- B) Association
- C) Aggregation
- D) Multiplicity
- E) Inheritance

[1 marks]

iv. In a Class Diagram, a multiplicity of zero or more would be designated by

- A) 0..*
- B) 0-*
- C) a crow's foot
- D) a 0 and a vertical line
- E) none of the above

[1 marks]

v. The condition where the methods and/or attributes defined in an object class can be inherited or reused by another object class is known as

- A) encapsulation
- B) generalization
- C) inheritance
- D) specialization
- E) none of the above

[1 marks]

b) Determine whether each statement is true or false.

i. Use case diagrams graphically depict the interactions between the system and external systems and users.

[1 marks]

ii. UML is a programming language.

[1 marks]

iii. The UML does not prescribe a method for developing systems – only a notation for modeling.

[1 marks]

iv. A Student object class and a Teacher object class would have a supertype/subtype relationship.

[1 marks]

v. Composition is drawn with a filled diamond.

[1 marks]

Q5. Suppose you have a class FunClass with public methods show, tell, and smile and private methods get and put. If MoreFunClass is a subclass of FunClass,

a) draw a class diagram for the FunClass and MoreFunClass, and

[3.5 marks]

b) write the above classes using either Java or C.

[4 marks]