



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology

Second Year, 1ST Semester Examination – 2013

IT 3103 – Object Oriented Analysis and Design (New)

Instructions for Candidates:

Answer five (05) questions.

Time : Three (03) hours

No of pages : 04

No of questions : 08

1. a) What are the drawbacks of Structured System Analysis and Design? (04 Marks)
- b) What are the advantages of Object Oriented System Analysis and Design (04 Marks)
- c) Briefly describe the following concepts (12 Marks)
- i. Polymorphism
 - ii. Encapsulation
 - iii. Inheritance
 - iv. Abstraction
- (Total Marks 20)**
2. a) Using C++ code segments define/explain following Object Oriented concepts
- i. Class (04 Marks)
 - ii. Object (04 Marks)
 - iii. Overloading (04 Marks)
 - iv. Constructor (04 Marks)
 - v. Inheritance (04 Marks)
- (Total Marks 20)**

3. a) What is the purpose of drawing an activity diagrams? (04 Marks)
- b) Draw symbols used in activity diagram to represent followings. (04 Marks)
- i. Start Activity
 - ii. Stop Activity
 - iii. Fork/Join
 - iv. Decision Point
- c) Draw an activity diagram for the following student registration System. (12 Marks)]

A training organization requires a student registration system. All courses offered by the institute are described in course catalogue. The course catalogue is a collection of details about subjects offered such as the subject title, subject coordinator, department, and the number of credits. A student can follow only two subject at any given time. When they selecting a subject they must also give one more alternative subject in case the subject is not offered during that period. A subject is offered if there are more than 10 students registered for the subject.

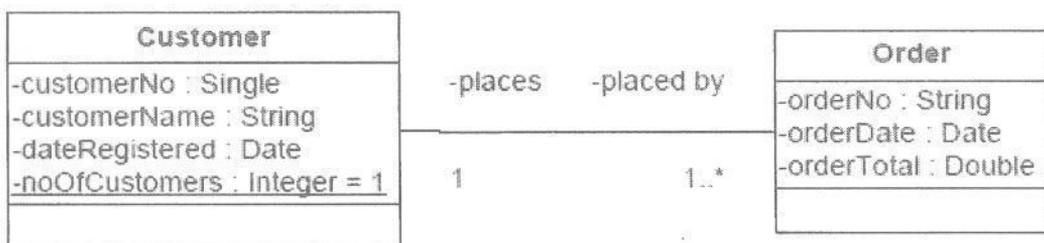
(Total Marks 20)

4. The “HS- Man” operates in the Colombo suburbs of western province, building huts and Shelters for private customers. When a customer approaches him, he visits their house, takes measurements and then discusses possible huts or shelters which might interest the customer. As a result of this discussion, the HS- Man sends the customer a detailed quotation. The customer may or may not accept the quotation. In due course the customer is sent an invoice for the work done. The HS-Man allows part-payments over six months in order to encourage more business.
- The HS-Man is considering creating a website as a means of attracting new customers. He anticipates the website will allow customers to browse examples of his work, browse company details including likely prices and timescales, email him with a request for a visit and permit (part-)payment of invoices.

- a) What is the business objective of the above system? (03 Marks)
- b) Construct a use case diagram that covers the future website as well as any necessary current business processes. (12 Marks)
- c) In the new website a facility is offered to pay (or part-pay) the invoice. Write the elaborated use case for this. (05 Marks)
- (Total Marks 20)**

5. a) You have been invited to give a talk to trainee programmers outlining the reasons for the widespread use of object oriented programming within the software development industry. Summarize the points you would present in your talk. (10 Marks)
- b) Discuss how Use Case diagrams and scenarios contribute to the development of a system. (10 Marks)
- (Total Marks 20)**

6. a) What are the differences between class diagram and object diagrams? (05 Marks)
- b) Draw sample object diagram for the following class diagram. (08 Marks)



- c) Discuss the sequence diagram with suitable example. (07 Marks)

(Total Marks 20)

7. Consider the following case study and answer.

“This application will support the operations of a technical library for an ATI. This includes the searching for and lending of technical library materials, including books, videos, and technical journals. All library items have registration code (research area code + running number). Each borrower can borrow up to 10 items. Each type of library item can be borrowed for a different period of time (books 6 weeks, journals 3 days, videos 1 week). If returned after their due date, the employee will be charged a fine, based on the type of item (books Rs.5 /day, journals and videos Rs 20/day). Materials will be lent to employees only if they have

- (1) no overdue lendable,
- (2) fewer than 10 articles out, and
- (3) total fines less than 100:-. “

- a) Identify classes of the above system. (04 Marks)
- b) Identify generalization/specialization relationships from the above scenario.(04 Marks)
- c) Draw class diagram for the above case study. (12 Marks)

(Total Marks 20)

8. a) Discuss the importance of UML. (04 Marks)
- b) What are the diagrams defined in UML (04 Marks)
- c) What is the purpose of drawing an use case diagram. (04 Marks)
- d) Describe the following terms in Use case model (08 Marks)

- I. Actor
- II. Usecase
- III. Include
- IV. Extend

(Total Marks 20)