Reg. No. :

Question Paper Code : 50392

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Fifth/Sixth Semester

Computer Science and Engineering

CS 6502 – OBJECT ORIENTED ANALYSIS AND DESIGN

(Common to Information Technology)

(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. Define an object. Identify the probable attributes that will be modeled in a Library database for the object BOOK.

2. Outline the purpose of using use cases, to describe requirements.

3. Define cohesion and coupling.

4. What are design patterns ?

5. When to create a subclass of a superclass ?

6. What is inception ?

7. Outline the key reason for modeling a package diagram.

8. Name the two types of UML interaction diagrams.

9. What is unit testing ?

10. Define a test case. Give example.

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PART – B   (5×13=65 Marks)

11. a) i) Present an outline of object-oriented analysis and object-oriented design. (7)
       ii) Why the Unified process has emerged as a popular and effective software
           development process ?   (6)

(OR)

   b) Model a state transition diagram for the following scenario :   (13)

   Here is what happens in a microwave oven :

   • The oven is initially in an idle state with door open, where the light is turned
     on.
   • When the door is closed it is now in idle but the light is turned off.
   • If a button is pressed, then it moves to initial cooking stage, where the timer
     is set and lights are on and heating starts.
   • At any moment the door may be opened, the cooking is interrupted, the
     timer is cleared and heating stops.
   • Also while cooking, another button can be pushed and extended cooking
     state starts, where the timer gets more minutes. At any moment door can be
     opened here also.
   • If the timer times out, then cooking is complete, heating stops, lights are off
     and it sounds a beep.
   • When the door is open, again the oven is in idle state with the door open.

12. a) Explain with an example creator and information expert GRASP patterns. (13)

(OR)

   b) Explain with an example the factory method design pattern.   (13)

13. a) i) Explain with an example a concrete use case and an abstract use case. (5)
       ii) Explain with an example generalization and specialization and write a note
           on abstract class and abstract operation.   (8)

(OR)

   b) i) What is multiplicity of an association ? Explain with an example the different
         types of multiplicities.   (7)
      ii) Explain with an example aggregation and composition.   (6)

14. a) Consider the following use cases that play a role in a banking system :
   i) Deposit
   ii) Withdraw (Minimum balance has to be checked)
   Model Sequence diagram for the above two use cases.   (13)

(OR)

   b) Explain with a diagram gang of four (GoF) pattern summary and relationships.   (13)

15. a) i) How is class testing different from conventional testing ? Explain with an example.   (7)
   ii) Write a note on system testing.   (6)

(OR)

   b) What is integration testing ? Explain the same with respect to object oriented systems.   (13)

PART – C   (1×15=15 Marks)

16. a) Model a class diagram for a "Banking System". State the functional requirements you are considering.   (15)

(OR)

   b) i) Model a use case diagram for the following scenario :   (8)

   Deepthi super market wants a subsystem to process supply orders via the Web. The user will supply via a form their name, password, account number and a list of supplies along with an indication of the quantities desired. The subsystem will validate the input, enter the order into a database and generate a receipt with the order number, expected ship date and the total cost of the order. If the validation step fails, the subsystem will generate an error message describing the cause of the failure.

   ii) "A component represents a modular, deployable and replaceable part of a system that encapsulates implementation and exposes a set of interfaces". Elucidate with an example.   (7)