F 6801

(Pages : 3)

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Seventh Semester

Branch : Computer Science and Engineering

CS 010 704—OBJECT ORIENTED MODELING AND DESIGN (CS)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours
Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 marks.

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

2. Name and draw the building blocks of a data flow diagram.

3. Outline the advantages of breaking a system into subsystems.

4. What is a binary association ? Give example.

5. Outline the purpose of using use cases to describe requirements.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 marks.

6. Explain with an example an abstract class.

7. Outline a nested state diagram with an example.

8. Present an outline of dynamic modeling.

9. When to create a subclass of a superclass ? Appraise with an example.

10. Explain with an example how a package diagram in the Unified Modeling Language depicts the dependencies between the packages that make up a model.

(5 × 5 = 25 marks)

Turn over

Part C

*Answer **all** questions.*

Each full question carries 12 marks.

11. Explain with a diagram the stages in object-oriented modeling.

Or

12. (a) Explain with an example generalization as extension and restriction.

(6 marks)

    (b) Appraise with an example multiple inheritance.

(6 marks)

13. Model a state chart diagram for the following scenario :

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 with door closed, 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.

Or

14. Model a data flow diagram for a "Banking System". State the functional requirements you are considering.

15. What, is an architectural framework ? Explain with an example the components of an architectural framework.

Or

16. What is a global resource ? Give examples and appraise the mechanisms for controlling access to them.

17. (a) What is multiplicity of an association ? Explain with an example the different types of multiplicities.

(6 marks)

    (b) Present an outline of the object design activities.

(6 marks)

Or

18. (a) Outline the need for documenting the object design.

(4 marks)

    (b) Appraise with an example the contents of an object design document.

(8 marks)

19. (a) Model a use case diagram for the following scenario :

(6 marks)

The goal is to process different types of credit applications at a bank. The credit applications include those for home equity loans, home mortgage loans, auto loans, and credit cards. From the bank's perspective, therefore, the customers are home owners, home buyers, auto buyers, and credit card applicants. To process any type of loan or credit card application, the bank needs to check the applicant's credit history, based on a report from the credit bureau. For the first two types of loans, the bank summons an assessor to assess the property value before making a decision.

    (b) Model a class diagram for the following scenario :

(6 marks)

A Company is organized into departments. Each department has employees working in it. The attributes of department include department number and department name. The attributes of employee include employee number, employee name, date of birth, gender, date of joining, designation and basic pay. Each department has a manager managing it. There are also supervisors in each department who supervise a set of employees. Each department controls a number of projects. The attributes of project include project code and project name. A project is controlled only by one department. An employee can work in any number of distinct projects on a day. The date an employee worked, in time and out time has to be kept track

Or

20. Explain with an example how a sequence diagram describes the dynamic behavior of a set objects arranged in time sequence.

(5 × 12 = 60 marks)