Total No. of Questions : 12]

SEAT No. :

P1474

[Total No. of Pages : 4

May - June 2012

[4164] - 722

B.E. (Information Technology)

OBJECT ORIENTED MODELING & DESIGN

(2008 Pattern) (Sem. - I)

Time :3 Hours] *[Max. Marks :100*

Instructions to the candidates:-

1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section I and Solve Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section II.*
2) *Answers to the two sections should be written in separate books.*
3) *Figures to the right indicate full marks.*
4) *Neat diagrams must be drawn wherever necessary.*
5) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain in detail new features added in UML 2.0. [6]

b) OMG standard CORBA is a standard for middleware to develop distributed networked applications. Explain the following concepts in the context of distributed applications and CORBA : [6]

i) Distributed Objects/Components.

ii) Stubs and Skeletons.

iii) Interfaces.

c) Discuss by giving appropriate example when will you model a entity such as 'bank account' as. [4]

i) Attribute

ii) Class

OR

Q2) a) What is RUP? How it is different from waterfall model? [6]

b) What is association? Model the associations that a 'Programmer' can work on at most one 'Project' at a time but a Manager can work on more than one projects at the same time. [4]

c) Show how Stereotype, Tagged Values, and Constraints can be used to extend UML. Explain the concepts by taking the example of modeling a 'Library Database Management System'. [6]

P.T.O

Q3) a) Explain with example following types of Stereotypes : [8]

i) Instanceof ii) Refine

iii) Friend iv) Become

b) State common uses of class diagram. Draw a class diagram for the system explained below : [9]

The system is for a marketing company. We have the country divided into marketing regions. salespersons work for regions. Salespersons make sale that are described in terms of the day of sale, the products sold with quantity and rate. The products are categorized into two categories: indian products and imported products. Use aggregation, inheritance, association, and dependency and realization relationships to model above system.

OR

Q4) a) Differentiate with example : [8]

i) Aggregation and Composition.

ii) Collaboration and Usecase.

b) How are use cases useful at analysis, testing phases of software development? [5]

c) What kind of projects will best benefit by UML modeling and which kind of projects will not benefit significantly? [4]

Q5) a) Draw a use case diagram using advanced notations for a 'College BE Project Management System'. System will help department to manage college projects approval, monitoring project progress, project exam scheduling and scheduling of mock presentations for projects. Students will use system to report to department and guide, view project deadlines, communicate (problem, reports) with guide (two way). Students may also co-ordinate with each other through the system. HOD can use the system to generate various departmental and university related reports for BE projects. [8]

b) In the context of composite structure diagram, explain following terms with example : [9]

i) Port

ii) Connector

iii) Part

Draw a composite structure diagram for banking system.

OR

Q6) a) Give notation for an interface (in two different ways) and show how it relates to components and classes. **[6]**

b) What is OCL? Give the example of Pre-condition, Post-condition in OCL. **[6]**

c) Draw a package diagram for "Railway Reservation System" showing packages, elements owned, package relationships. **[5]**

SECTION - II

Q7) a) Draw a sequence diagram for the use case 'Connect a call to a certain extension number' in a telephone EPABX at your college. EPABX has multiple incoming lines. Incoming call is forwarded to extension number directly if known. In case caller does only know name of employee, extension number is first searched then extension is connected. Call can be kept on hold till extension if busy is available again or a local conversation (between two extensions) can be interrupted for outside call. **[8]**

b) What is the purpose of interaction overview diagram? Draw a interaction overview diagram to represent 'discharge formalities' that are required to be done in hospital. **[8]**

OR

Q8) a) Give notation for following concepts in Sequence diagram and also explain the need for the concept with suitable example from the domain of buying computers online. Make suitable assumptions about the working of your hypothetical Online Computer Shop. **[10]**

i) Create
ii) Return values
iii) Self call
iv) Destroy

b) Explain the need of timing diagram. Draw timing diagram for any real time applications. **[6]**

Q9) a) Consider a typical day that one may spend shopping for items at the local shopping mall as a visitor. Make further relevant and meaningful assumptions about the working of the mall and what you may do as part of shopping to fill the gaps in the above description. For above example draw activity diagram. Make use of : **[8]**

i) Fork and Join
ii) Swim lanes
iii) Object flow
iv) Guard condition

b) Define the term artifact. How does one model parallel message flow in sequence diagram? Explain. **[8]**

OR

Q10) a) State in Embedded applications why are state diagrams one of the most important diagrams. Explain with example. **[8]**

b) Explain following terms with example : **[8]**

i) Loop and break in sequence diagram.

ii) Activity states and action states.

Q11) a) Draw a deployment diagram for the following application. A full-fledged website is to be hosted for your college. Make suitable assumptions. **[6]**

b) Define the term component. Explain the concept of provided and required interface that a component supports. Model a component 'Product' that can give us the details of the product such as description, price, and available quantity. The product component provides various services into one or more interfaces. Product Brower component needs above services to display product information. Draw component diagram using class for above system. **[8]**

c) How you will model Distributed system using UML? Explain with example. **[4]**

OR

Q12) a) Differentiate Synchronous and Asynchronous Message with example. **[4]**

b) Compare Collaboration and Sequence diagram. Draw a Collaboration diagram for the uses case 'Registration of New Student at School'. **[8]**

c) Model a software system for controlling a water purifier which can be either ON or OFF. In the ON state it can be in ARO or UV mode. There are buttons to change from one mode to other or this mode can change automatically based on the hardness of water cutoff (Aro when pH value < 1.5 and UV when pH value > 1.5). User can manually override any nodes through by pressing appropriate buttons. Draw state machine diagram for given system. **[6]**