Total No. of Questions : 10]

SEAT No. :

P2349

[Total No. of Pages : 3

[5254]-682

B.E. (Information Technology.)

SOFTWARE MODELING & DESIGN

(2012 Pattern) (Semester - I)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***

2) ***Use UML 2.0 notations for draw UML diagrams***

Q1) a) Draw a sequence diagram for booking a ticket of one passenger from source to destination by a railway. Assume that the seats in the railway are available. **[6]**

b) Draw a class diagram for generalization relationship using the keywords Shape, ClosedShape, OpenShape, line, circle, ellipse. **[4]**

OR

Q2) a) Use the following details to draw the activity diagram When a customer visits a bank to withdraw money, she needs to fill a pay slip and hand it over to the bank employee. The bank employee issues a token to her. The customer waits till the token number is displayed at the cash counter. The bank employee checks the balance in the account and passes the slip for checking the signature. When the signature is verified and balance is adequate, the token number is displayed at the cash counter. The customer approaches the cash counter. The cashier gives the amount to her. She goes away from the counter. **[6]**

b) Show asynchronous, synchronous, create object and return message notations in the context of sequence diagram. **[4]**

P.T.O.

Q3) a) For the following description identify which nouns can go as class and which cannot.

Every employee fills up a self-appraisal form. The self-appraisal form has a list of expectations. Each expectation has a description, self-rating, appraiser's rating and justification. The appraisal form has overall rating. Based on the self-assessment, every employee gives self-rating in the range of 0 to 5 for each expectation [0 means 'Expectation not met' and 5 means 'Expectation completely met']. Once completed, employee submits the appraisal form. Appraiser can view the appraisal forms of subordinates **[6]**

b) Elaborate the concept of concurrent sub states in the context of state diagram. **[4]**

OR

Q4) a) A vending machine has a coin insertion slit, a display panel and a dispensing tray. At start, a vending machine is in IDLE state. Being into IDLE state, when the coins are inserted in the coin insertion slits, it goes to accepting coins state. When the amount becomes equal to the price of drink, it goes to select drink state. In this state, it asks for selection of the drink. When it is selected, it goes into dispensing state. In this state, it delivers the drink can in the dispensing tray and goes back to idle state. Identify the transitions and write those as trigger[guard condition]/effect in the state diagram. **[6]**

b) Elaborate the steps to identify use cases of a system. **[4]**

Q5) a) Write a note on Making a Reuse Plan using libraries and patterns. **[8]**

b) What is a procedure driven software control and event driven software control elaborate. **[8]**

OR

Q6) a) Describe the ways of splitting a system into subsystems. **[8]**

b) Describe process of selecting hardware resources for a software system. **[8]**

Q7) a) Elaborate the need of design patterns. **[4]**

b) Explain the use of state design pattern with example. **[6]**

c) Apply strategy design pattern to the following and draw the class diagram. A company has many employees. Each employee has a name and a performance index in the range of 1 to 5. When the index is 2 the increment is 10 percent of the previous year salary, 3 the increment is 15 percent of the previous year salary, 4 the increment is 20 percent of the previous year salary and when it is 5 the increment is 25 percent of the previous year salary. Indicate the roll of each class in the class diagram. **[8]**

OR

Q8) a) Write the types of design pattern. Give one example of each type. **[4]**

b) Explain the use of adaptor design pattern with example, **[6]**

c) Weather station supplies information about the temperature, pressure & humidity to three display devices named Statistics display, Graph display & Forecast display. Draw the class diagram of the system with appropriate design pattern. Write clearly the role of each class in the class diagram.**[8]**

Q9) a) Define verification and validation. **[4]**

b) What is test driven development? Explain in brief **[4]**

c) Given three inputs as integer numbers to check whether it represents a triangle, equilateral triangle, a right angled triangle and an isosceles triangle write one test case for each. **[8]**

OR

Q10)a) Explain white box testing in brief. **[4]**

b) Explain black box testing in brief. **[4]**

c) A mail sign up UI is to be tested; it should have name, email id, password and a secret question, write four test cases to test this UI. **[8]**