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CSE431 Enrol. No. .....

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END SEMESTER EXAMINATION : NOV. – DEC., 2017

OBJECT ORIENTED SYSTEM DESIGN

Time : 3 Hrs. *Maximum Marks : 70*

Note: ***Attempt questions from all sections as directed. Mention the assumption to simplify UML diagrams.***

SECTION – A (30 Marks)

Attempt any **five** *questions out of* **six.**
Each question carries **06** *marks.*

1. Define object-oriented design model. Also discuss the input and output of object-oriented design. How it differs from SSAD?

2. What do you mean by class diagram? Suppose that a computer is built of one or more CPUs, sound card and video card. If we model the system with representative classes, draw the class diagram

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(relationship and multiplicity) among the following classes: computer, CPU, sound card and video card.

3. What is the role of Swim lanes & Guard condition in Activity diagram? Draw the Activity diagram of ATM Machine system.

4. What are behavioural patterns? Formulate your own problems and explain how you can apply each of the patterns to solve them.

5. Differentiate between :

   (a) Test strategy and Test plan

   (b) Generalization & Specialization

   (c) Low Coupling and High Cohesion

6. Comment on "The goal of Analysis model is to develop a model of what of the system will do" Also, draw the sequence diagram of login page.

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three.**
Each question carries **10** *marks.*

7. (a) Draw a use case diagram for the following :–

A student wants to register for the course leader. The course leader assists the student to select their modules. The modules that are selected are recorded by the school administrator in the registration file. (5)

(b) Discuss the nine core process workflows in the Unified Process. Draw a neat diagram showing each phase. (5)

8. (a) A simple digital watch has a display and two buttons to set it, the A button and the B button. The watch has two modes of operation, display time and set time. In the display time mode, hours and minutes are displayed, separated by a flashing colon. The set time mode has two sub-modes, set hours and set minutes. The A button is used to select modes. Each time it is pressed, the mode advances in the sequence: display, set hours, set minutes, display etc. Within the sub-modes, the B button is used to advance the hours or minutes once each time it is pressed. Buttons must be relaxed before they can generate another event. Prepare a state diagram of the watch. (6)

(b) Comment on the difference between the object relationship of" Football Team and its Player" and " General Ledger and its account". (4)

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9. (a) OMT (the Object Modeling Technique) was developed at General Electric Research and Development Center. It takes a modelling approach to analysis and design, and is based around three models which represent different views of the system. Explain the three models in detail. (5)

(b) Consider the application is assumed to be a web based application which is deployed in a clustered environment using server 1, server 2 and server 3. The user is connecting to the application using internet. The control is flowing from the caching server to the clustered environment. So draw the deployment diagram of order management system. (5)

SECTION – C (20 Marks)

(Compulsory)

10. (a) Following case study depicts a problem domain in an information system for a video rental store. Simplifying assumptions and details are mentioned :

- It is a stand-alone store, not part of a larger organization.
- Rents only videos, not computer games or other items.

- A "video" can be in any medium: tape, DVD, and so on.
- The rental charge may vary by medium. For example, DVD rentals are more expensive than tapes.
- The store does not sell anything. For example, there are no sales of videos or food.
- All transactions are rentals.
- The input medium by which membership and video rentals are captured is not important.
- Cash-only payments.
- On completion of a rental, the customer receives a transaction report with 'typical' information on—use your judgement.
- Each renter has a separate membership.

Using the *confirmMembership* operation contract, complete the UML collaboration diagram. Annotate every message with the GRASP (Expert, Creator, and so on) and/or other pattern that justifies it. (10)

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(b) (i) For *Rent Videos* use case, create a system sequence diagram in the UML notation.

(ii) Compare and contrast between Sequence diagram and Collaboration diagram. (10)