

**PURWANCHAL UNIVERSITY**

**V SEMESTER FINAL EXAMINATION- 2005**

**LEVEL** : B. E. (Computer)

**SUBJECT:** BEG371CO, System Analysis & Design.

**TIME:** 03:00 hrs

**Full Marks:** 80

**Pass marks:** 32

*Candidates are required to give their answers in their own words as far as practicable.*

*The figure in the margin indicates full marks.*

**Attempt any EIGHT questions.**

- Q. [1] What is a System? Explain different characteristics of a System with the help of System Diagram of any organization.
- Q. [2] **CASE I**  
The existing system in any Medical shop is entirely manual. The Shop gets its products from dealers who in turn may buy them from a higher level dealer or directly from a manufacturer. The Store Keeper keeps the trace of all available medicines in stock. When a customer approaches for a particular medicine, where stock is checked to verify the availability of that product and it is supplied to the customer who is billed for it. The Shop Keeper has to keep the track of the inventories and when the stock of particular product reaches below the predetermined level, he has to reorder those products from the dealers.  
Develop a Context Diagram and Level- 0 DFD for the above case study. Try to complete the above narration by making up reasonable explanations to complete the story.
- Q. [3] Draw an E-R diagram for the system described in Q.[Q].
- Q. [4] Explain Object Oriented Development Life Cycle. Compare it with simple SDLC.
- Q. [5] Explain Structure Charts and their importance in Program and Process design.

- Q. [6] What is Unified Modeling Language? List out different UML diagrams. Explain Use-Case Diagram in terms of Actor and Use-Cases giving suitable example.
- Q. [7] With proper reasoning, explain how CASE Tools aid in information system Development? Explain different types of CASE Tools used during System Analysis and Design process.
- Q. [8] What is distributed system? Explain different types of distributed system you know.
- Q. [9] Explain the four different approaches to installation? Which is the most expensive? Which is the most risky?
- Q. [10] What is a state diagram? Describe it with the help of a suitable example.

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**Attempt any EIGHT questions.**

- Q. [1] [a]** List and explain the different phases of the Systems Development Life Cycle. [5]  
**[b]** What do you understand by system thinking? Describe your college as a system draw the system diagram and label its characteristics. [5]
- Q. [2]** Develop a context diagram, level 0 diagram and if necessary child diagram for the "Video Rental System" describe in the following narrative: [10]  
Customers apply for a video rental card by filling out a form. After providing a means of verifying their identity, they are issued a video rental card. Customers rent video by giving the clerk their video rental card. The clerk totals the amount of rental, which is received from the Customers. Customers are given a receipt with the due date on it. A record is created for each item rented. When customers return video cassettes, the clerk checks whether the videos are returned on time or not., If the video is returned late, a note and the amount of late fee is made on the record. If a customer has late fee, he or she is required to pay the amount the next time an item is rented.  
The customer rental records are received once a month for customers who have rented more than the bonus level, currently set at \$50. Bonus customers are sent a monthly bonus letter including free rental coupons. Once a year, the customer records are examined for Customers who have rented more than a yearly bonus level, currently set at \$250. A yearly bonus

- letter including free rental coupons and a free video is sent to the customer.
- Q. [3]** Model the logic of the following situation using Structured English, Decision Table (also simplify the table) and Decision Tree. [10]  
A student who has not missed more than 5 classes is issued an Exam Slip. For the student who has missed more than 5 classes, the personnel checks whether the Leave letter is Submitted or not. The Exam slip is then issued to the student only when the Leave is approved.
- Q. [4] [a]** What is degree of a relationship? Explain with examples. [5]  
**[b]** Develop an ER Diagram for a generic Banking System. [5]
- Q. [5] [a]** What do you understand by Functional Dependency? Consider the following functional dependencies:  
Applicant\_ID-> Applicant\_Name  
Applicant\_ID->Applicant\_Address  
Position\_ID->Position\_Title  
Position\_ID->Date\_Position\_Open  
Position\_ID->Department  
Applicant\_ID+Position\_ID-> Date\_Applied  
Applicant\_ID+Position\_ID->Date\_Interviewed  
Represent these attributes with 3NF relations.  
**[b]** What problems can arise during merging relations? Discuss with examples. [5]
- Q. [6] [a]** What is denormalization? Explain with examples. Discuss one situation where denormalization may apply. [5]  
**[b]** Briefly explain about the different types of file organizations. [5]
- Q. [7] [a]** Describe the Object-Oriented Development Life Cycle. How does it differ from the traditional Systems Development Life Cycle? [5]  
**[b]** What is UML? List and briefly describe the different types of UML diagrams. [5]
- Q. [8]** What do YOU Understand by Use Case Modeling? What types of relationship may exist between use cases? Draw a use case diagram for capturing the requirements of the following system to be developed: [10]

An auto rental company wants to develop an automated system that would handle car reservations, Customer billing, and car auctions. Usually a Customers reserves a car, picks it up and then returns it after a certain period of time. At the time of pick up, the customer has the option to by or waive collision insurance on the car. When the car is returned, the customer receives a fill and pays the specified amount. For corporate customers, there is a separate feature called corporate billing, where the corporations the customer works for are billed in addition to rending out cars, every six months or so, the auto rental company auctions the cars that have accumulated over 20,000 miles.

- Q. [9] [a]** Develop a structure chart for producing the report card of a student. [5]
- [b]** What are the issues to be considered to make a good design of the system? What are the techniques to specify the contest of modules? [5]
- Q. [10] [a]** What do you understand by installation? Discuss the different approaches to installation. [5]
- [b]** What are the different types of maintenance and how do they differ? What are the factors that influence the cost of maintenance? [5]