

*Handwritten notes:*  
07/06/07  
Wily 11/02  
Mason

- N.B.** (1) Question No.1 is compulsory.  
 (2) Attempt any **four** questions out of remaining **six**.  
 (3) Illustrate answers with **sketches** wherever **required**.  
 (4) **Figures** to the **right** indicate **full marks**.  
 (5) Assumptions made should be **clearly** stated.
1. (a) What is a model ? What are the different types of modelling ? Briefly describe each. **10**  
 (b) What is dynamic modelling ? Explain dynamic modelling with reference to state, events, conditions, activity, state and event generalization, shot diagram, internal actions, controlling operations. Give example of each. **10**
2. (a) How can you use use-case analysis for object oriented analysis. Construct object model by using use-case analysis for airline reservation system. **10**  
 (b) Explain various techniques of object oriented analysis and design. **10**
3. Construct use-case diagram, class diagram and collaboration diagram for the following scenario :- **20**  
 The hospital wishes to maintain a database to assist with the administration of its wards and operating theatres and to maintain information relating to its Patients, Surgeons and nurses. Most patients are assigned to a ward on admittance and each ward may contain many patients. However, consultants (Senior Surgeons) at the hospital may have private patients who are assigned to private rooms. A nurse may or may not be assigned to a ward and he/she can not be assigned to more than one ward. A ward may have many nurses assigned to it. Each ward is dedicated to a particular type of patients (e.g. geriatric, pediatric, maternity, etc). A nurses may or may not be assigned to a theatre and he/she can not be assigned to more than one theatre. A theatre may have many nurses assigned to it. A patient may have a number of operation. The information to be recorded about an operation includes the type of operation, the Patient, the Surgeons involve, data, time and location. Only one Surgeon may perform an operation, any other Surgeons present being considered as assisting at the operation. Each consultant has a specialization.
4. Draw a detailed class diagram, state transition diagram and Deployment diagram for the following scenario :- **20**  
 A product is to be installed to control elevators in a building with  $m$  floors. The problem concerns the logic required to move elevators between floors according to the following constraints.  
 Each elevator has a set of  $M$  buttons, one for each floor. These illuminate when pressed and cause the elevator to visit the corresponding floor. The illumination is cancelled when the elevator visits the corresponding floor.  
 Each floor except the first floor and top floor has two buttons, one to request an up-elevator and one to request a down-elevator. These buttons illuminate when pressed. The illumination is cancelled when an elevator visits the floor and then moves in the desired direction.
5. (a) Explain Component diagram and its use with example. **10**  
 (b) Name and explain in short Six Booch diagrams. **10**
6. You are appointed as a consultant for the intranet development of your college. You have to manage the web site of your college containing Administrative Information, departmental information, library information, alumina data etc. **20**  
 Write detailed statement of the problem and construct the sequence diagram, component diagram and deployment diagram.
7. Write detailed note on the following (any two) :- **20**  
 (a) Forward and reverse Engineering and its importance.  
 (b) Phases of OMT (Briefly describe each phase)  
 (c) Various Relationships between classes with examples.