Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

VII SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: OBJECT ORIENTED ANALYSIS AND DESIGN USING UML

[CSE 405]

REVISED CREDIT SYSTEM

Time: 3 Hours 5-12-2015 MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.
- Missing data, if any, may be suitably assumed.

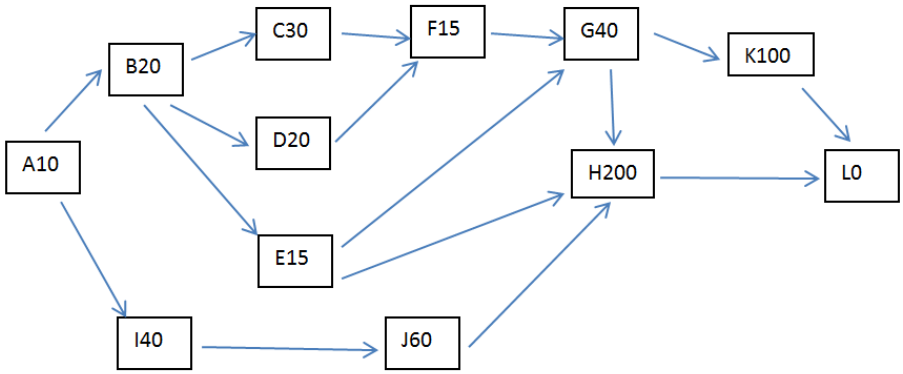
1A. Explain the various activities involved in requirements gathering. 4M

1B. What is a prototype? Under what circumstances is it beneficial to construct a prototype? Does the construction of a prototype always increase the overall cost of software development? 3M

1C. Which life cycle model would you follow for developing software for each of the following applications? Mention the reasons justifying your choice of a particular life cycle model. 3M

a. A well understood data processing application.
b. New library automation software that would link various libraries in the city.
c. The graphical user interface part of a large software product.

2A. For the given activity network, identify the slack time, early start, early finish, late start and late finish for each activity and determine the critical path. [Each node represents activity name followed by the duration taken by that activity. Ex: I activity takes 40 days] 5M



2B Explain the various stages of COCOMO model. 5M

Problem Statement: ***Passport Automation System (PAS)***

Passport Automation System is used in the effective dispatch of passport to all of the applicants. This system adopts a comprehensive approach to minimize the manual work and schedule resources, time in a cogent manner. The core of the system is to get the online registration form (with details such as name, address etc.,) filled by the applicant whose testament is verified for its genuineness by the Passport Automation System with respect to the already existing information in the database. This forms the first and foremost step in the processing of passport application. After the first round of verification done by the system, the information is in turn forwarded to the regional administrator's (Ministry of External Affairs) office. The application is then processed manually based on the report given by the system, and any forfeiting identified can make the applicant liable to penalty as per the law. The system also provides the applicant the list of available dates for appointment to 'document verification' in the administrator's office, from which they can select one. The system forwards the necessary details to the police for its separate verification whose report is then presented to the administrator. The administrator will be provided with an option to display the current status of application to the applicant, which they can view in their online interface. After all the necessary criteria has been met, the original information is added to the database and the passport is sent to the applicant.

3A.	For the above problem statement PAS, draw a detailed Use Case diagram.	5M
3B.	For the above problem statement PAS, draw an Activity Diagram for the entire system and also explain the importance of activity diagram in UML.	5M
4A.	Identify the classes using noun phrase approach for the above given problem statement and give the CRC card for each of the identified classes.	5M
4B.	Give the detailed class diagram showing the relationships and multiplicity for the above given problem statement.	5M
5A.	Draw sequence diagrams for ANY 3 use cases identified for the above problem statement.	6M
5B.	Differentiate between temporal, external and state based events. Categorize the use cases identified in Q3A. into different types of events and justify your answer.	4M
6A.	Explain the various UI principles.	6M
6B.	Give the characteristics of design patterns.	4M

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