

Nirma University

Institute of Technology

Semester End Examination (IR), May-2010

B. Tech. (Part-Time) in Computer Engineering, Semester-IV

B. Tech. in Computer Engineering / Information Technology, Semester-VI
2CE322 Software Engineering

Roll/
Exam No

Supervisor's initial
with date

Time : 3 Hours

Max Marks: 100

Instructions:

- i) Attempt all questions.
- ii) Figures to the right indicate full marks.
- iii) Use section-wise separate answer books.
- iv) Draw neat sketches wherever necessary.
- v) Assume suitable data where necessary and specify them.

Q.1 Do as directed.

[20]

A Select the appropriate answers and give justifications for the same. [12]

- 1 What is configuration management in software engineering?
 - i) overall management of the design of the system
 - ii) management of the configurable components in a system
 - iii) the identification of the configuration of a system at discreet points in time to control changes to the configuration
 - iv) in object-oriented programming, the management of objects that control the configuration of some other function(s) in the system
- 2 Which statement about a prototype is true?
 - i) It is a functional model of the entire system.
 - ii) It is the complete untested product ready for final review by the customer.
 - iii) It is necessary in order to accurately verify that the product is progressing in accordance with requirements specifications.
 - iv) It is a full-scale model of the entire system at some partial stage in development showing the functional form of the system.
- 3 What is usability in software engineering?
 - i) the ability of the end user to use the product successfully
 - ii) a measure of the relative effort required to learn how to use a software product
 - iii) the degree to which the product integrates with the environment in which it is used
 - iv) a metric that describes the degree to which a software product meets its requirements

- 4 A software project classifies system entities, their activities and relationships. The classification and abstraction of system entities is important. Which modeling methodology most clearly shows the classification and abstraction of entities in the system?
- i) data flow model
 - ii) event driven model
 - iii) object oriented model
 - iv) entity-relationship model
- 5 Software _____ is work done to enhance software functionality, correct errors and improve the performance of software.
- i) re-design
 - ii) maintenance
 - iii) corrections
 - iv) re-engineering
- 6 How is an application's "version" different from its "release"?
- i) A release is a small change to an earlier release.
 - ii) A version is a small change made to an earlier version.
 - iii) A version is the one made available to customers and a release is a change to a previous version.
 - iv) A release is the one made available to customers and a version is a change to a previous release.
- B Write a short note on Risk management system. Give appropriate examples for the same. Which development model is most suited for such type of systems? [08]
- Q.2 Answer the following.** [16]
- A Identify the Requirement Specifications for Conference Management System. [04]
- B Consider the Payroll system to be developed in SDLC methodology. The system is to be designed for monthly salaried personnel with standard process of salary computations i.e. earnings, deductions and additions and the salary is payable is to be transferred to the employees bank account. [08]
- Consider the approach – using the system with high end technology usage.
- i) Define the system, requirements, and scope.
 - ii) Decompose the system and put it into a hierarchical structure.
 - iii) Identify Input, Process, Output, and testing components and put them into appropriate system model template.
 - iv) Apply appropriate software process model and provide the test cases.
- OR**
- B Draw state machine models of the control software for the following: [08]
- i) an automatic washing machine that has different programs for different types of fabrics.
 - ii) A software for DVD player
- C When emergency changes have to be made to systems, the system software may have to be modified before changes to the [04]

requirements have been approved. Suggest a process model for making these modifications that ensures that the requirements document and the system implementation do not become inconsistent

Q.3 Answer the following. [14]

- A** Draw a sequence diagram showing the actions performed in the ticket-issuing system. You may make any reasonable assumptions about the system. Pay particular attention to specifying user errors. [06]
- B** Write a short note Software Reengineering with the appropriate example. [04]

OR

- B** What are various drawbacks of Rapid Application Development process model? [04]
- C** What is service oriented system architecture? Explain with appropriate figures. [04]

SECTION-II

Q.4 Answer the following. [18]

A) True or False. Justify. [10]

1. Good quality engineering can prevent defects from happening, not merely find defects and make sure they are fixed.
2. Risk management is about identifying all possible project risks and making sure they are mitigated.
3. It is harder to make changes to a design if it has high coupling.
4. You may be able to find more bugs with 5 hours of unit testing and 10 hours of system testing than just by doing 20 hours of system testing and bug fixing.
5. For a design to be really good, it must be best on all the quality attributes: be most flexible, easily portable, modifiable in every respect, have high performance, be easily testable, be completely reusable etc.

B) Consider following system. [06]

The teacher enters his courses with number of hours and preferred scheduling constraints into a database. The administrator fetches all teachers' data and feeds it to the optimization algorithm. The result from the optimization algorithm is sent back to the administrator who makes some manual corrections and stores the approved schedule in the database. The students navigate in the database aided by an applet to find out their schedule for their courses. Develop an appropriate and required OO Analysis and design model.

C) Differentiate between verification and validation. [02]

Q5 Solve any following [16]

- A)** Explain why distributed systems are inherently more scalable than centralized systems. What are the likely limits on the scalability of the system? Draw an architecture of CORBA. [04]
- B)** What are the components of a real-time operating system. What are the applications of this? [06]

OR

- B)** How does the use of a project-based configuration management system such as CVS simplify the version management process? [06]
- C)** Describe data acquisition system. [04]
- D)** Discuss the advantages of graphical information display and suggest 3 applications where it would be more appropriate to use graphical rather than digital displays of numeric information. [02]

Q.6 Answer the following. [16]

- A)** What are the advantages of using CASE tools in software engineering? List the name of these tools used for the various activities of SE. [06]
- B)** Define the structure of test plan. Also explain clean room software development process. [06]

OR

- B)** Explain why program inspections are an effective technique for discovering errors in a program. What types of errors are unlikely? [06]
- C)** What are the activities of Software Quality Management? Explain CMM model. [04]