Subject: SOFTWARE ENGINEERING

Time: 3 Hours **Max. Marks: 10**

JUNE 2011

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. Software _____ is work done to enhance software functionality, correct errors and improve the performance of software.

(A) re-design **(B)** maintenance
(C) corrections **(D)** re-engineering

b. In the software testing process, when is validation testing performed?

(A) After coding **(B)** After unit testing
(C) After module testing **(D)** None of above

c. What is usability in software engineering?

(A) The ability of the end user to use the product successfully.
(B) A measure of the relative effort required to learn how to use a software product.
(C) The degree to which the product integrates with the environment in which it is used.
(D) A metric that describes the degree to which a software product meets its requirements.

d. Which statement about a prototype is true?

(A) It is a functional model of the entire system.
(B) It is the complete untested product ready for final review by the customer.
(C) It is necessary in order to accurately verify that the product is progressing in accordance with requirements specifications.
(D) It is a full-scale model of the entire system at some partial stage in development showing the functional form of the system.

e. What is functional decomposition in software system design?

(A) A design method that breaks a system into smaller units
(B) A requirements analysis method that breaks the system into cohesive and related units
(C) A design methodology that uses modular prototypes to build the complete system
(D) The ability to upgrade the features of a particular module of a system with minimal impact on other modules

f. Which statement about the preliminary design stage of a software development project is true?

(A) The preliminary design is an internal document used only by programmers.
(B) The preliminary design is the result of mapping product requirements into software and hardware functions.
(C) The preliminary design of the product comes from the initial meetings between the customer and the programmer.
(D) The developers produce the preliminary design by defining the software structure in enough detail to permit coding.

g. A data dictionary was created during the requirements analysis phase of a software engineering project. What information does it contain?

(A) Content description **(B)** Data type
(C) Restrictions **(D)** All of the above

h. The software process

(A) is the general set of activities undertaken to develop a software product.
(B) includes project management activities such as planning and scheduling.
(C) uses various process models to engineer software.
(D) includes configuration management activities as part of it.

i. Which of the following is / are true with regard to the spiral model of software development?

(A) It is an evolutionary model that includes an explicit risk analysis phase.
(B) Spiral model is an incremental software development model.
(C) It is a universal model that may incorporate other models such as the linear sequential model or the prototyping model during different epochs.
(D) It is applicable for projects with clear and stable requirements.

j. What is / are the correct statement(s) with respect to software quality?

(A) The Capability Maturity Model (CMM) is a scheme to classify a software development organization according to its capability.
(B) The quality management process starts after the design stage of the software development process.
(C) A quality plan sets out the desired product qualities and how they are assessed.
(D) Each deliverable of the software development process is an input to the quality management process.

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Explain the waterfall model in detail. What are the advantages and disadvantages of this model? **(8)**

b. Discuss typical software risks. What are the risk management activities? Is it possible to prioritize risk? **(8)**

Q.3 a. Differentiate between Functional and non functional requirements. **(8)**

b. What do you mean by requirement engineering? Explain its activities in details? **(4)**

c. Draw the use case diagram of Library Management System. **(4)**

Q.4 a. What are the stages of software specification and its interfaces with the design process? **(8)**

b. Explain the RAD technique in detail. **(4)**

c. What do you mean by prototype of software? What are the benefits of making a prototype of software? **(4)**

Q.5 a. With the help of a diagram, explain an object model of an invoice processing system. **(8)**

b. Explain the use of different Client-Server architecture. **(4)**

c. What do you mean by Peer-to-Peer architecture? Explain it with the help of example. **(4)**

Q.6 a. Under what circumstances might you develop a design where objects execute concurrently? **(8)**

b. Explain the problems with software reuse. **(4)**

c. Discuss the Component Based Software Engineering. **(4)**

Q.7 a. What are the basic principles of User Interface design? **(8)**

b. Explain the various characteristics of dependable processes. **(8)**

Q.8 a. Discuss the differences between verification and validation, and explain why validation is a particularly difficult process. **(6)**

b. Describe two metrics that have been used to measure programmer productivity. **(6)**

c. Differentiate between the structural testing and Functional testing. **(4)**

Q.9 a. What are the key areas covered by the ISO 9001 model for quality assuran **(4**

b. Under what circumstances would you recommend the use of the staged representation of the CMMI? **(4)**

c. Discuss the concept of Configuration Management Planning. **(4)**