COMILLA UNIVERSITY

Dept. of Computer Science & Engineering

3rd Year 2nd Semester B.Sc (Hon's) Final Examination 2015

Course Title: Software Engineering

Course Code: CSE-323 **Session: 2012-2013**

Total Marks: 60 **Time: 3 hours**

There are **8(Eight)** questions. Answer any **5(Five)**. Figures in the right margin indicate marks. Writing anything on the question paper is strictly prohibited.

1) a. What is Software Engineering? What are the differences between Computer Science and Software Engineering? 3

b. Describe the Rapid Application Development (RAD) model. What are the drawbacks of the RAD model? 5

c. "Prototyping can be problematic for some reasons"-What are the reasons? 2

d. What is ***Elicitation*** in Requirement Engineering? 2

2) a. Explain how both the waterfall model of the software process and the prototyping model can be accommodated in the spiral process model. 4

b. If you were a lead developer of a software company and you are asked to submit a project/product within a stipulated time-frame with no cost barriers, which model would you select? Why? 4

c. Discuss the following four points of effective software management: people, product, process and project. 4

3) a. What is an *Agile* process? Describe *Agility* (for software projects) in your own words. 3

b. What is Software Design? What are the characteristics of a good Software design? 4

c. What is Extreme programming (XP)? Describe the XP concepts of refactoring and pair programming in your own words. 5

4) a. You have been appointed a project manager within an information systems organization. Your job is to build an application that is quite similar to others your team has built, although this one is larger and more complex. Requirements have been thoroughly documented by the customer. What team structure would you choose and why? What software process model would you choose and why? 6

b. Suppose a small sized software project has 44000 LOC, find staff-months, effort and productivity. What are the relative advantages of writing either LOC or the FP metric to measure the size of the software product? 4

c. Define the different categories of software risks. 2

5) a. Develop a complete use case for the following activities: 6

i) Making a withdrawal at an ATM

ii) Using your charge card for a meal at a restaurant

iii) Searching for books (on a specific topic) using an online bookstore.

b. You have been asked to build Network-based course registration system for your university. Develop a complete set of CRC model index cards on the system. 4

c. What are the core steps of the Six Sigma methodology? 2

6) a. What is white-box testing? Using white-box testing method, what can the software engineer derive? 4

b. What types of errors can black-box testing find out? 2

c. Describe the different types of software maintenance. 4

d. What are the essential conditions for software re-engineering to be successful? 2

7) a. What is function point? Compute the function point value, man-month, and LOC for a project with the following information domain characteristics: 4

Number of external inputs:32
Number of external outputs:60
Number of external inquiries:24
Number of internal logical files:8
Number of external interface files:2

Assume that all complexity adjustment values are average and past data indicates that one FP translates into 60 lines of code and 12 FPs are produced for each man-month of effort.

b. Define verification and validation. 2

c. What is cyclomatic complexity? How do you compute cyclomatic complexity? 2

d. What is software quality control? What do you need to do to affect quality in a positive way? 4

8) a. What is software Re-engineering? Describe the software Re-engineering process model with proper diagram. 3

b. Define metrics, measures and indicators? 2

c. What is Reverse Engineering? Show the reverse Engineering process with appropriate diagram. 4

d. What is Forward Engineering? Describe the activities of Forward Engineering for Client-Server Architecture. 3