**...Science and Technology University**

3rd Semester (Level-2, Semester-I), **Final Examination** of B.Sc. Engg.(CSE), January-June/2020, **Session:** 2018-19

Course Code: **CIT-213** Course Title: **Software Engineering**

[Figures in the right margin indicate full marks, Splitting answer if highly discouraged]

**Time: 03 Hours** **Total Marks: 70**

**Answer any five of the following questions**

1. a) What is the most important difference between generic software product development and custom software development? What might this mean in practice for users of generic software products? [4]

   b) Briefly discuss why it is usually cheaper in the long run to use software engineering methods and techniques for software systems? [5]

   c) When describing a system, explain why you may have to start the design of the system architecture before the requirements specification is complete? [5]

2. a) Imagine that a government wants a software program that helps to keep track of the utilization of the country's vast mineral resources. Although the requirements put forward by the government were not very clear, a software company was tasked with the development of a prototype. The government found the prototype impressive, and asked it be extended to be the actual system that would be used. Discuss the pros and cons of taking this approach. [4]

   b) Suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following systems. Explain your answer according to the type of system being developed: [5]
   - A system to control antilock braking in a car
   - A virtual reality system to support software maintenance
   - A university accounting system that replaces an existing system
   - An interactive travel planning system that helps users plan journeys with the lowest environmental impact

   c) Write down each of the clauses in the ACM/IEEE Code of ethics for software engineers. [5]

3. a) Which method involve customer representatives directly in the development process? Describe about the iterative development methods that focus on reducing process overheads and documentation and on incremental software delivery. [4]

   b) At the end of their study program, students in a software engineering course are typically expected to complete a major project. Explain how the agile methodology may be very useful for the students to use in this case. [5]

   c) To reduce costs and the environmental impact of commuting, your company decides to close a number of offices and to provide support for staff to work from home. However, the senior management who introduce the policy are unaware that software is developed using Scrum. Explain how you could use technology to support Scrum in a distributed environment to make this possible. What problems are you likely to encounter using this approach? [5]

4. a) Identify and briefly describe four types of requirements that may be defined for a computer-based system. [4]

   b) When emergency changes have to be made to systems, the system software may have to be modified before changes to the requirements have been approved. Suggest a model of a process for making these modifications that will ensure that the requirements document and the system implementation do not become inconsistent. [5]

   c) You have taken a job with a software user who has contracted your previous employer to develop a system for them. You discover that your company's interpretation of the requirements is different from the interpretation taken by your previous employer. Discuss what you should do in such a situation? You know that the costs to your current employer will increase if the ambiguities are not resolved. However, you also have a responsibility of confidentiality to your previous employer. [5]

5 a) You have been asked to develop a system that will help with planning large-scale events and parties such as weddings, graduation celebrations, and birthday parties. Using an activity diagram, model the process context for such a system that shows the activities involved in planning a party (booking a venue, organizing invitations, etc.) and the system elements that might be used at each stage. [4]

b) Develop a sequence diagram showing the interactions involved when a student registers for a course in a university. Courses may have limited enrollment, so the registration process must include checks that places are available. Assume that the student accesses an electronic course catalog to find out about available courses. [5]

c) Should there be a separate profession of 'software architect' whose role is to work independently with a customer to design the software system architecture? A separate software company would then implement the system. What might be the difficulties of establishing such a profession? [5]

6 a) When code is integrated into a larger system, problems may surface. Explain how configuration management can be useful when handling such problems. [3]

b) Explain how the number of known defects remaining in a program at the time of delivery affects product support. [4]

c) Testing is meant to show that a program does what it is intended to do. Why may testers not always know what a program is intended for? [3]

d) Explain how advances in technology can force a software subsystem to undergo change or run the risk of becoming useless. [4]

Patuakhali Science and Technology University
B.Sc.Engg. (CSE) 3rd Semester (Level-2, Semester-I.), Jan-June-2022, Session:- 2020-21
Course Code: CIT-213 Course Title: Software Engineering
Mid Exam Credit Hour: 3.00 Full Marks: 20 Duration: 1.00 Hours

1. a) Differentiate between white Box retesting and Black Box testing with both advantage and disadvantage. 3
   b) Show the logical organization of testing. List out the test plan attributes with test execution and reporting scenario. 2
   c) How to measure software reliability? Give a proper example. 2
   d) What is Six-Sigma methodology for software engineering? Define the role of SQA group. 3

   define, measure analyze improve control

2. a) Write down the principle of agile method with its drawback. 2
   b) Show the waterfall model with its phases and problem. Define evolutionary development. 3
   c) At the end of their study program, students in a software engineering course are typically expected to complete a major project. Explain how the agile methodology may be very useful for the students to use in this case. 2
   d) What is component-based software engineering? Define spiral model of software process with its application in different sectors.

**Patuakhali Science and Technology University**
B.Sc. Engg. (CSE) 3rd Semester, (Level-2, Semester-I)
Course Code: CIT-213 Course Title: Software Engineering
Session :2020-2021 , Final Examination Jan-June-2022 Credit Hour: 3.00, Full Marks:70, Duration: 3.00 Hours

[Figures in the right margin indicate full marks. **Split answering of any question is not recommended.**

***Answer any 5 of the following questions***

1. a) How do you define MOI Model? Define the five Common-Sense Approach to software projects. 3
   b) What are the four organizational paradigms for software engineering teams? 3
   c) Why is teamwork important in software engineering? How can you be a good team member in software development? 3
   d) List out the factors you must be considered when selecting a software project team structure. 3
   e) What are the four P's of an effective software project management? Who are stakeholders in software engineering? 2

2. a) What is software scope in software engineering? List out the some key steps to understand a project scope statement. 3
   b) Show the tasks required for project scheduling and planning in software engineering. 2
   c) Define project estimation in software engineering? Give an example of conventional LOC based estimation. 3
   d) How function point (FP) analysis is used in estimation of software project? Give proper example. 2
   e) Differentiate between estimation for OO projects and estimation for agile projects. 4

3. a) Suppose you are open a new startrup business agency. Now you want to develop a customized ERP solution for your business venture. So how to write a software requirement specification as per analysis of your business solution? 3
   b) Write down the advantages of domain analysis in software engineering. Define data modeling. 3
   c) What are data objects and data attributes in software engineering? Show the ERD notation with an example. 3
   d) Define class in software engineering. Difference between method hiding and encapsulation. 2
   e) Show the use case diagram, activity diagram and swimlane diagrams in software engineering. 3

4. a) What is flow oriented modeling in software engineering? Show the Flow Modeling Notation. 3
   b) Write down the steps of Data Flow diagramming guidelines. Give a level 0 DFD example. 3
   c) Why control flow diagram (CFD) is a very helpful tool for both systems developers and stakeholders? Give an example of CFD. 3
   d) Define the states of a system. Show the State Diagram for the Control Panel Class. 3
   e) Differentiate between association and dependency. Define package analysis with example. 2

5. a) Briefly describe about modified waterfall model. 4
   b) Show the data centered software architecture, data flow architecture and call-return architecture design. 3
   c) What is UI/UX design in software engineering? Write down the steps for interface analysis and user analysis. 3
   d) Illustrate evolutionary development in software engineering process with its problem and applications. Show incremental development process. 4
   e) Distinguish between plan-driven development approach and agile development approach. 3

6. a) Find out the agile method specific problem with its applicable area. 3
   b) Define extreme programming (XP) with its release cycle and principle of practice. 3
   c) Difference between regression testing and acceptance testing. List out the 6 Principle of Security testing. 3
   d) Show the benefits of software performance testing. 2

Patuakhali Science and Technology University
Final Examination of B.Sc. Engineering in CSE (Level-2, Semester-I)
Course Code: CIT-213 Course Title: Software Engineering
January-June-2021 Session: 2019-2020 Credit Hour: 3.00 Full Marks: 70 Duration: 3.00 Hours

Answer any seven question

1. a) What is the importance of software Engineering? Briefly describe what should be steps taken under the process of developing a software system. 3
b) Explain the principles which play a major role in development of software. 2
c) Describe the components and quality which is necessary for the documents of software specification. 3
d) What are the benefits of metrics in software engineering? 2

2. a) Define the blue print methodology 2
b) Give the benefits of verification and validation in software development and tell about the techniques of verification and validation in the process of software development. 3
c) Define the meaning of quality assurance. Explain the role of testing in quality assurance. 3
d) Write short note on software failure, black box testing, white box testing and stress Testing. 2

3. a) Explain the various types of models which used in software Engineering. 4
b) Write down the concept of data flow diagram 2
c) Describe the objectives of a) coding b) structured programming in terms of software engineering. 2
d) You have been asked to develop a system that will help with planning large-scale events and parties such as weddings, graduation celebrations, and birthday parties. Using an activity diagram, model the process context for such a system that shows the activities involved in planning a party (booking a venue, organizing invitations, etc.) and the system elements that might be used at each stage 2

4. a) At the end of their study program, students in a software engineering course are typically expected to complete a major project. Explain how the agile methodology may be very useful for the students to use in this case. 3
b) To reduce costs and the environmental impact of commuting, your company decides to close a number of offices and to provide support for staff to work from home. However, the senior management who introduce the policy is unaware that software is developed using Scrum. Explain how you could use technology to support Scrum in a distributed environment to make this possible. What problems are you likely to encounter using this approach? 3
c) You have taken a job with a software user who has contracted your previous employer to develop a system for them. You discover that your company's interpretation of the requirements is different from the interpretation taken by your previous employer. Discuss what you should do in such a situation? You know that the costs to your current employer will increase if the ambiguities are not resolved. However, you also have a responsibility of confidentiality to your previous employer. 4

5. a) Why a software project manager require for a software industry? Show the responsibilities of project manager. 2
b) Briefly describe the project planning, scope management and project estimation in terms of software management activities. 3
c) Write short note about project scheduling, resource management, project communication management, configuration management. 3
d) Suppose you are a project manager of XYZ software development team. Company authority asks you to present a project schedule for a client. Draw a Gantt chart and PERT chart for that software scheduling. 2

6. a) What is Entity-Relationship model? Define data dictionary and show the requirement of data dictionary. 3
b) Differentiate among software design strategies like structured design, function oriented design and object oriented design. 3
c) Compare between Top-down design and Bottom-up design. 2
d) Show the user interface design activities. 2

7. a) List out the characteristics of good software. 2
b) Discuss about the Big Bang model with its advantage and disadvantage. Show the V-Model structure. 4
c) Describe about the data flow diagram components with their three levels of architecture. 4
Or
Write down each of the clauses in the ACM/IEEE Code of ethics for software engineers.

8. a) Imagine that a government wants a software program that helps to keep track of the utilization of the country's vast mineral resources. Although the requirements put forward by the government were not very clear, a software company was tasked with the development of a prototype. The government found the prototype impressive, and asked it be extended to be the actual system that would be used. Discuss the pros and cons of taking this approach 3
b) Suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following systems. Explain your answer according to the type of system being developed: 4
   - A system to control antilock braking in a car
   - A virtual reality system to support software maintenance
   - A university accounting system that replaces an existing system
   - An interactive travel planning system that helps users plan journeys with the lowest environmental impact
c) Should there be a separate profession of 'software architect' whose role is to work independently with a

# Patuakhali Science and Technology University
## Department of Computer Science and Information Technology

...mester (Level-2, Semester-I), **Midterm Examination** of **B.Sc. Engg.(CSE)**, January-June/2020, Session: 2018-19

Course Code: CIT-213 Course Title: Software Engineering

**Full Marks: 15 Duration: 50 minutes**

[Figures in the right margin indicate full marks]

***Answer all the following questions.***

1. Software engineering is not only concerned with issues like system heterogeneity, business and social change, trust, and security, but also with ethical issues affecting the domain. Give some examples of ethical issues that have an impact on the software engineering domain. 5

2. Imagine that a government wants a software program that helps to keep track of the utilization of the country's vast mineral resources. Although the requirements put forward by the government were not very clear, a software company was tasked with the development of a prototype. The government found the prototype impressive, and asked it be extended to be the actual system that would be used. Discuss the pros and cons of taking this approach. 5

3. When emergency changes have to be made to systems, the system software may have to be modified before changes to the requirements have been approved. Suggest a model of a process for making these modifications that will ensure that the requirements document and the system implementation do not become inconsistent. 5

Course Code: CIT-213 Course Title: Software Engineering

Session :2015-2016 Credit Hour: 3.00 Full Marks: 70 Duration: 3.00 Hours

[Figure in the right margin indicates fullmarks. Split answering of any question isnot recommended.]

*Answer any 7 of the following questions.*

1. a) What is software re-engineering? Findout thereasons for the Failure of Water Fall Model. 2
   b) Define Software Evolution Laws. 3
   c) Explain the different phasesinvolvedin waterfall life cycle. 2
   d) What is feasibility study? Show the contents we should contain in the feasibility report.

2. a) What are the variousstepsunderrisk analysis? 3
   b) Explain the commonrisk tools andtechniques. 3
   c) Compare basic objects and aggregate objects used software configuration. 2
   d) Drawa diagram forpurewaterfall life cycle. 2

3. a) Briefly describe the characteristics of good software. 2
   b) Write the distinction between SCM and Software Support. 2
   c) What are the purposes of Data Flow diagrams and Entity-Relationship diagrams? Give an example of each. 3
   d) How dowe define Software Quality? Define Software Reliability. 3

4. a) How do we computethe "Expected Value" for Software Size? 2
   b) What is software reuse? Explain various aspects of software reuse. 3
   c) Define the terms: i. Agility ii. Agile Team 2
   d) What arethe challengesin software? Write about software change strategies. 3

5. a) Discuss the different types of CASE tools available in Software Engineering. 3
   b) Explain all the phases involved in the implementation phase. 3
   c) Compare between the "Known Risks" and "Predictable Risks"? 2
   d) How many types of software maintenance? Why is it necessary? 2

6. a) List the process activitiesofsoftware configuration management. 3
   b) What is user acceptance testing? Explain different testing's in user acceptance testing. Why is it necessary? 3
   c) How to compute the cyclomatic complexity? What are the common approaches in debugging? 2
   d) Define White Box Testing. Explain in detail about Black box testing. Or 2
   A project PP has 100 nos. Regression test cases, 80 nos. test cases executed during regression testing.Find the percentage oftest casesexecuted.

4
   a) Writedown the importance of CBSE Modeling. 2

**Patuakhali Science and Technology University**

B. Sc. Engg. (CSE) Level-2, Semester-I Final Examination-2014 (January-June), Session 2012-2013

Course Code: CIT 213, Course Title: Software Engineering

Credit Hour: 03 Full Marks: 70 Duration: 3 Hours

[Figure in the right margin indicates full marks. Split answering of any questions is not recommended.]

**Answer any 5 of the following questions.**

1. a) Define software Engineering. Distinguish between Computer Science and System Engineering. 6
   b) Which kind of key challenges are being faced in the software Engineering field presently? 3
   c) Explain why system testing costs are particularly high for generic software products which are sold to a very wide market. 5

2. a) What are the differences between a software process model and a software process? 4
   b) Explain how both the waterfall model of the software process and the prototyping model can be accommodated in the spiral process model. 6
   c) Design a process model for running system tests and recording their results. 4

3. a) What do you mean by design Classes? 3
   b) Briefly write down a "well formed" design class. 8
   c) Describe the difference between verification and validation in respect of software Engineering. 3

4. a) What is the overall strategy for software testing? 2
   b) Draw a figure of testing strategy. 2
   c) What are the steps for top-down integration, bottom-up integration and regression testing? 6
   d) Explain why it may be necessary to design the system architecture before the specifications are written. 4

5. a) Briefly describe requirement of engineering process that is accomplished through the execution of six distinct functions. 12
   b) Write short note on object aggregation of software engineering. 2

6. a) Illustrate on Quality Function Development (QFD). 3
   b) Briefly explain generic software product development and customer software development. 4
   c) Draw a sequence diagram (partial) for safe home security function and illustrate it. 7

# Patuakhali Science and Technology University

B. Sc. Engg. (CSE) Level-2, Semester-I Final Examination-2013 (January-June), Session -2011-2012

Course Code: CIT 213, Course Title: Software engineering

Credit Hour: 03 Full Marks 70 Duration: 3 Hours

[Figure in the right margin indicates full marks. Split answering of any questions is not recommended.]

**Answer any 5 of the following questions.**

1. a) Define Software Engineering. Distinguish between Computer Science and System Engineering. 6
   b) In the 21st century, which kind of key challenges are facing in the Software Engineering field? 3
   c) What are the five generic process frame work activities? 5

2. a) What is software process model? 3
   b) Explain how both the waterfall model of the software process and the prototyping model can be accommodated in the spiral process model. 6
   c) What does a system engineering model accomplish? 5

3. a) Briefly describe requirement of engineering process that is accomplished through the execution of six distinct functions. 12
   b) Write short note on object aggregation of software engineering. 2

4. a) Illustrate on Quality Function Development (QFD). 3
   b) What are the difference between generic software product development and customer software development? 3
   c) Draw a sequence diagram (partial) for safe home security function and illustrate it. 8

5. a) What do you mean by design classes? 3
   b) Briefly write down a "well formed "design class. 8
   c) Describe the difference between verification and validation in respect of Software Engineering. 3

6. a) What is the overall strategy for software testing? 3
   b) Draw a figure of testing strategy. 2
   c) What are the step for top-down integration, bottom-up integration and regression testing? 6
   d) How do you complete the black-box and white-box testing? 3