UNIVERSITY OF TORONTO
Faculty of Arts and Science
April-May Examinations 2002

CSC408H1S

Software Engineering

Duration: 2 hours.
One 8 ½ by 11 aid sheet is permitted.

PLEASE HAND IN

Student Number _____

Name _____
(surname) (given name)

INSTRUCTIONS:

1. Print your name and student number on this examination paper.
2. Check this examination paper. There are 9 pages including this cover page.
3. All questions are to be answered directly in this examination paper.
4. The mark for each question is given in the right-hand column, and the total number of marks is 89. This test is worth 25% of your final grade.

HINTS:

1. Read each question carefully.
2. Use a pen, not a pencil.
3. Write legibly and understandably. An unreadable answer receives no credit.
4. You don't have to write in full sentences. Phrases or points will suffice.
5. For each question, spend time appropriate to the number of marks given for that question.
6. If there seems to be ambiguity in the question, ask the invigilator for clarification or write your assumptions and continue. If your assumptions are reasonable and don't trivialize the problem, you will probably receive full credit.

Do not write in the table below.

topic	questions	marks available	marks achieved
project management	1-3	14	_____
software testing	4-9	29	_____
installation and maintenance	10-13	20	_____
software reuse	14-16	10	_____
software reliability	17-18	12	_____
software tools	19	4	_____
	total	89	

_____/25

PROJECT MANAGEMENT

1. There are three ways you can respond to risks. Identify these. [6]
Then for any of the following risks, give an example of that kind of response.

- personnel turnover, loss of key people
- inadequate, inconsistent development tools or platform
- the organization doesn't know how to sell the product

risk response	example of response

2. Give three of the steps or tasks when controlling risks <u>after</u> you have decided how to control them. [3]

1
2
3

cont'd...

3. Indicate whether the following statements are true or false. [5]
For two (2) of your choices, you may provide an explanation.

True	False		
❒	❒	1	Management is mostly concerned with risks that have a high probability of impact and low probability of occurrence.
❒	❒	2	Risk control involves monitoring the risk throughout the project.
❒	❒	3	Risk analysis should be started before the project is estimated.
❒	❒	4	Risk management work sequence is: identification, quantification, control, response.
❒	❒	5	Risk exposure is the product of ((probability of risk) * (risk's cost or impact)) for all risks.

No. reason for choosing true or false

___ _____

_____

_____

___ _____

_____

_____

TESTING

4. Name 4 types of faults. [4]

1
2
3
4

cont'd...

5. When can you stop testing?. Give two specific indications or scenarios. Don't just say "the number of bugs is low". [4]

1
2

6. Full test documentation would name the components being tested and give the date and time of the test. What other information would you find? Name 4 types. [4]

1
2
3
4

7. The testing phase of a project involves proving that the software does what it should and that it contains as few faults as possible. An improved testing model is more proactive and has two additional activities. What are they? [4]

1
2

cont'd...

8. Indicate the project phase in which you would perform the following tests. Some of the tests can be done in more than one phase. [9]

	analysis	design	coding	testing	maintenance
correctness proof	❒	❒	❒	❒	❒
step-wise abstraction	❒	❒	❒	❒	❒
scenario-based evaluation	❒	❒	❒	❒	❒
code inspection	❒	❒	❒	❒	❒
documentation testing	❒	❒	❒	❒	❒
usability testing	❒	❒	❒	❒	❒
regression testing	❒	❒	❒	❒	❒
environment testing	❒	❒	❒	❒	❒
coverage-based testing	❒	❒	❒	❒	❒

9. Name four functions of program analysis tools and indicate whether they conduct static or dynamic analysis. [4]

static	**dynamic**	**program analysis tool functions**
❒	❒	
❒	❒	
❒	❒	
❒	❒	

cont'd...

INSTALLATION AND MAINTENANCE

10. What output (deliverables) does management expect from a post-implementation review? Name three. [3]

1
2
3

11. Give one example for each of the following types of maintenance. [5]

corrective	
adaptive (minor)	
adaptive (major)	
perfective	
preventive	

cont'd...

12. For each of the following implementation methods, indicate where the cost, risk, user workloads or data loading workloads are high, medium or low when comparing the implementation methods with each other. [8]

implementation method	cost	risk	user workload	data loading workload
direct				
parallel				
pilot				
phased				
day one				

13. A system should be replaced when the costs start to exceed the benefits. Give 4 reasons for a system's costs to rise after a few years of use. [4]

1
2
3
4

SOFTWARE REUSE

14. Define **portable software**. [2]

cont'd...

15. Reusable software components (code, design, etc.) need to be documented so that developers can easily locate them. In addition to the component name and type, what information would you want the documentation to contain? Name or describe 4 items. [4]

1
2
3
4

16. Describe two problems in developing reusable software. How could you overcome these problems? [4]

problem #1
solution #1
problem #2
solution #2

cont'd...

SOFTWARE RELIABILITY

17. Briefly describe four measurements you might make to check a system's reliability. [8]

1
2
3
4

18. Give two examples of how achieving a high level of reliability may degrade system performance. [4]

1
2

SOFTWARE TOOLS

19. Looking back at all your programming assignments at U of T, what software tools do you wish you had been able to use? Name two and explain how they would have helped you. [4]

1
2