National Exams May 2016

04-Soft-A7, Software Process

3 hours duration

NOTES:

1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made.

2. This is an OPEN BOOK EXAM. Candidates may use any non-communicating calculator.

3. FIVE (5) questions constitute a complete exam paper. The first five questions as they appear in the answer book will be marked.

4. Each question is of equal value.

5. Most questions require short written answers. Clarity and organization of the answer are important, but full sentences are NOT required. Be sure to bullet lists and ideas wherever possible.

Marking Scheme

1.	a) 2 marks b) 3 marks c) 5 marks	5	10 marks
2.	a) 5 marks b) 2 marks c) 3 marks	6.	a) 5 marks b) 5 marks
3.	10 marks	7.	a) 4 marks b) 3 marks c) 2 marks
4.	a) 4 marks b) 3 marks c) 3 marks	8.	a) 3 marks b) 2 marks c) 2 marks d) 3 marks

1.
a) What is software process model? What are typical components of the model?
b) Chose and briefly describe two software project metrics.
c) Briefly describe the incremental software process model. Identify a situation in which the incremental process is likely to be used. Identify the main drawback of the incremental process.

2.
a) What are the main parts of the project plan? Briefly (1-2 lines) describe each part of the plan.
b) What is agile software development?
c) Compare and contrast the risk assessment activities in two cases: (1) if you use the incremental model and (2) agile development.

3. Assume the project uses the incremental model and involves three teams. The whole project duration is estimated as 16 weeks. Draw a brief Gannt diagram (timeline chart) for the incremental process model. The project schedule must include managerial, development, and quality assurance activities. You do not need a grid paper; indicate the duration of each stage in days approximately.

4. Assume you are managing development of a pilot emulator, in which the pilot requests take-off and landing from the dispatcher, and the dispatcher must record the request and allow take-off or landing.
a) Draw a UML use case diagram modeling the system. Define entry and exit conditions, and quality requirements.
b) Draw a UML class diagram for the use case.
c) Draw the sequence diagram describing interactions between classes.

5. To estimate the cost of the project in the question #4 using the Function-Point approach, define counts:

	Simple	**Average**	**Complex**	**Total**
External Inputs				
External Outputs				
External Inquiries				
Internal Logical Files				
External Interface Files				
Count_total				

- Assign weights for Simple, Average and Complex arbitrarily, but reasonably.
- Chose three or four adjustment factors, assign values to them, and calculate the number of FP.

6.

a) Assume you are responsible for software quality assurance in a project. Describe briefly the quality assurance efforts including reviews, tests, etc. if you use the incremental model
b) Answer the question (a) for agile development.

7.

a) What is meant by the configuration of the software system? What is the difference between software version and variant?
b) Identify and describe briefly the main change control activities.
c) How would activities of the process of making change differ in two cases: (1) if you use the incremental model and (2) agile development?

8.

a) Compare and contrast software development and software evolution.
b) When the software maintenance activities must begin?
c) What is the purpose of program comprehension?
d) What is the purpose of restructuring?