National Exams   May 2018

04-Soft-B6, **Advanced Software Project Management, Life Cycle Methodologies**

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

1.
   a) Describe a common software process framework by defining framework activities that are common to all software projects?
   b) What types of software architectures do you know? Why the choice of an appropriate architectural style is important for design?

2.
   a) What are the similarities and differences between the sequential process model and rapid prototype development? What are the main disadvantages of these models?
   b) Describe the incremental process model and describe the main tradeoff within this model.

3.
   a) How the use of V-model improves software quality?
   b) Compare and contrast the typical spiral model and agile development

4.
   a) Describe briefly the parts of a typical project plan?
   b) Describe briefly software size metrics complexity metrics, and quality metrics.
   c) Why a large software company should have separate development and maintenance departments?

5.
The software lifecycle standard ISO/IEC-12207 defines six processes: acquisition, supply, development, operation, maintenance, and destruction. The ISO/IEC-1207 maintenance process defines six activities: process implementation, problem and modification analysis, modification implementation, maintenance review and acceptance, software migration, and software retirement. Describe these six activities of the maintenance process.

6.
   a) List Requirement's and Design Specifications used in the Conventional and Object-Oriented software projects.
   b) What is the purpose of design patterns in the object-oriented design?
   c) How component-based design can be used to create test specifications?

7.
Assume you manage development of the following software system.
The purpose of this system is to allow general users to view a consolidated list of adventures. Users will be able to view details on the adventures such as name, description, and features of the trail, pictures, status of the trail, peer ratings and safety information. The system will also have location information so it can show the adventures on a master map. This system will be a web application that any user with internet access can access. In order to collect all of the data that the system will need to about the adventures, the system will need to perform a number of functions. The first of which will be to allow unauthenticated users to view adventures, as this is the main point of the system. These users should be able to view lists of the adventures and the map which has an overall view of all of the adventures. The system will also need to accommodate users logging in.

   a) Which process model would you chose to develop the system?
   b) What are the functional requirements to the system?
   c) What are non-functional requirements?

8.
Assuming the software system from Question 8.
   a) How would you decompose the system using WBS?
   b) Explain the test plan you would develop for the system.