National Exams May 2015

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.

1.
   a) What is the software process model?
   b) What are the main phases common to all process models?
   c) Provide a brief overview of the major project scope management processes.

2.
   a) Describe the linear sequential and prototyping process models. Compare and contrast these two models.
   b) Describe very briefly evolutionary process models you know. What are advantages and disadvantages of evolutionary models in comparisons with the Waterfall model?

3.
   a) What is the V-model and how this model relates to the Waterfall model?
   b) What is agile development? Compare and contrast agile development and the Waterfall model?
   c) What are the major quality assurance activities in the Waterfall and agile development?

4.
   a) What is the focus of effective project management? Hint: focus on the four P's.
   b) What are the main project metrics used in the software process?
   c) What is forensic project management?

5.
The software lifecycle standard ISO/IEC-12207 defines six processes: acquisition, supply, development, operation, maintenance, and destruction. Describe these processes and deliverables.

6.
The Project Management Body of Knowledge (PMBOK^R) defines nine knowledge areas for project management: integration, scope, time, cost, quality, human resource, communication, risk, and procurement. Describe your understanding of the purpose of these nine project management components.

7.
Assume you manage development of the following software system.
The purpose of the project is developing a unique library of different network protocols designed to simulate various real world applications, such as torrents or streaming media, for means of stress testing consumer grade routers. After running the software outputs log files with the readings to a central database, where other testers and service designers will be able to access the results. The server itself has a secure web front end. The server handles the incoming log files and organizes them with various features, such as an auto plot function, a search function, and the ability to view the raw data for further manipulation. This software is designed to only work for OS X and Linux systems.

   a) What are the functional requirements to the system?
   b) What are non-functional requirements?

8.
Assuming the software system from Question 8.
   a) How would you decompose the system?
   b) How would you approach the project cost estimation?
   c) What are the main risk factors that can result in errors and require re-work?

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Marking Scheme

1. a) 3 marks
    b) 3 marks
    c) 4 marks

2. a) 5 marks
    b) 5 marks

3. a) 4 marks
    b) 3 marks
    c) 3 marks

4. a) 3 marks
    b) 3 marks
    c) 4 marks

5. 10 marks

6. 10 marks

7. a) 5 marks
    b) 5 marks

8. a) 3 marks
    b) 3 marks
    c) 4 marks