

National Exams May 2019

04-Soft-A6, Software Quality Assurance

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) The ISO 9126 standard provides six main quality characteristics: functionality, reliability, usability, efficiency, maintainability, and portability. Describe them briefly.
 - b) What is software quality control and what does it include?
 - c) What is the difference between software inspections and software testing?

2.
 - a) One of the known process improvement models is the Capability Maturity Model (CMM). Describe the levels of CMM. Explain how CMM is related to software quality.
 - b) What is the Waterfall V lifecycle model? Explain how high quality is achieved using the V-model.

3.
 - a) What are approaches to quality management in projects?
 - b) Describe briefly a simple process for project monitoring and control.
 - c) What is the objective of requirement traceability?

4.
 - a) Describe briefly software configuration management activities and explain how these activities are related to Software Quality Assurance.
 - b) What are the roles of Document Control Management and Source Control Management?

5.
 - a) What are economic benefits of software inspections and informal reviews?
 - b) List and explain briefly three types of defects which can be identified during software inspections.

6.
 - a) List activities of a mature test process.
 - b) Describe briefly any testing tool you know. What are advantages and drawbacks of the testing tool described?

7.

The question #7 is about the Software Quality Assurance activities visible to management. Please explain briefly the three activities below:

 - a) Audit Planning;
 - b) Audit Meeting;
 - c) Audit Reporting.

8.
 - a) What is software maintainability?
 - b) Explain briefly techniques to increase maintainability.
 - c) What is the main difference between safety-critical and safety related systems?

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Marking Scheme

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