W1-2-60-1-6

JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY

University Examinations 2017/2018

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN SOFTWARE ENGINEERING

ICS 3113 SOFTWARE QUALITY AND RISK ASSESSMENT

DATE: JANUARY 2018 **TIME: 3 HOURS**

INSTRUCTIONS: Answer Question **ONE** and any other **TWO** Questions

QUESTION ONE

The assessment of software quality is a subjective process where the quality management team has to use their judgment to decide if an acceptable level of quality has been achieved.

(a) Give THREE examples of questions related to a system's quality characteristics you would ask as a member of the quality management team to determine whether or not the software is fit for its intended purpose. **[6 Marks]**

(b) Software quality is not just about whether the software functionality has been correctly implemented, but also depends on the software quality attributes for example dependability, usability, efficiency and maintainability. List and explain another SIX quality attributes. **[6 Marks]**

(c) Commercial pressure for an early product release will affect product quality.

(i) Outline THREE quality attributes you might pay less attention to in these circumstances. **[4 Marks]**

(ii) When less attention is paid to EACH of your quality attributes stated above, identify TWO characteristics of the final product that may be affected as a result. **[4 Marks]**

QUESTION TWO

You work for a small software house which has won a contract with a new client to design, develop and implement a replacement database system. The client is a medical research organisation and has a very small IT section. Your company has little experience in this

business area. Your company has decided to use a new rapid development method for this project, and you have been appointed project manager.

(a) Explain the difference between **project** and **business** risk. Give THREE examples of EACH of these two categories of risk that might affect your company when undertaking the IT project described above. **[8 Marks]**

(b) Explain TWO factors used in evaluating risk exposure. Explain how each of these factors might be assessed quantitatively. **[4 Marks]**

(c) Risks can be assessed both quantitatively, as above, and qualitatively. Discuss the way in which risks could be assessed qualitatively and how these qualitative assessments could then be used to prioritise risks. **[4 Marks]**

(d) Draw up a table illustrating the qualitative assessment of risk exposure for TWO **project** risks that you have identified in part (a) above. **[4 Marks]**

QUESTION THREE

You have been asked to project manage the development of a small, interactive system for a village library. The system will provide functionality for adding new members (borrowers), updating members' details, lending books and returning books. Discussions with the library staff have revealed the following facts: there is some confusion and uncertainty about the content and layout of the interface and also the requirements for adding new members and updating members' details; the library may soon be taken over by the main city library.

Discussions with your Software Engineers have revealed the following facts: the uncertainty about the requirements means that the total development time will be difficult to predict; some of the new team members are unfamiliar with testing tools; some key team members may be unavailable at critical times; the team are planning to use some reusable software components which to date have not been tested.

(a) Identify SIX different types of risk applicable to this project **[6 Marks]**

(b) Create a risk checklist for this project by providing ONE example, from the scenario above, for each type. **[8 Marks]**

(c) Develop a strategy for managing SIX of the risks identified in part (b). Your answer should be in the form of a table with ONE strategy for each risk. **[6 Marks]**

QUESTION FOUR

(a) Using examples, distinguish between software process metrics and software product metrics. **[6 Marks]**

(b) Write a brief overview of the various forms of software process metrics available today, and discuss how they might be usefully employed from the initial project stages, through to the commissioning of a new system. Illustrate your answers with examples. **[10 Marks]**

(c) Describe FOUR common responses to a software project risk **[4 Marks]**