



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

SOFTWARE DESIGN METHODOLOGIES

SCS 2201

Final Examination Paper

MAY 2015

This examination paper consists of 3 pages

Time Allowed: 3 hours

Total Marks: 100

Examiner's Name: Samkeliso Suku Dube

INSTRUCTIONS

1. Answer any four (4) questions
2. Each question carries 25 marks

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	25
3.	25
4.	25
5.	100
TOTAL	

Copyright: National University of Science and Technology, 2015

QUESTION ONE

- a) A company recently purchased a commercial off-the-shelf application to automate their bill paying process. They now plan to run an acceptance test against the package prior to putting it into production. What is their reason for this type of testing? (10)
- b) Define the following:
- i. Software architecture (2)
 - ii. Software design (2)
 - iii. Process (2)
 - iv. Methodology (4)
- c) Differentiate bespoke from generic software. (5)

QUESTION TWO

- a) Explain the following iterative models:
- i. Prototyping (3)
 - ii. Rapid Application Development (3)
 - iii. SCRUM (agile methodology) (3)
- b) Distinguish between the project risks and product risks. (4)
- c) Software development methodologies must be adapted to the context of the project and product characteristics. Discuss. (12)

QUESTION THREE

- a) Describe why testing is part of quality assurance and give examples of how testing contributes to a higher quality of software products. (10)
- b) Software methodologies are divided into two categories. Discuss these two categories in detail. (10)
- c) Discuss the role played by a systems analyst in software development. (5)

QUESTION FOUR

- a) Explain the process of user interface design and list five guidelines for designing good user interfaces. (5)
- b) Define the term Object Oriented design. (3)
- i. Explain how it is different from the traditional design approach. (4)

- ii. Describe three major activities in performing Object Oriented design. (3)
- b) Good design is the key to effective software engineering. Explain what is meant by good software design and illustrate the general model of the software design process. (10)

QUESTION FIVE

- a) Compare and contrast the terms project management and software development. (5)
- b) Draw a UML use case diagram and class diagram for a partial specification of the system described below. Include as much relevant detail from the description as possible on the diagram.
- A Library loans three different types of items to customers: books, video tapes and CDs. Each item has a title and publisher. In addition, books have an author and CDs have an artist. The Library can have multiple copies of the same book, video tape and CD. There are two different types of customers, students and staff. For both kinds of customers the library has their name, sex, address. Students can borrow at most 20 items. (20)