

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES
COMPUTER SCIENCE DEPARTMENT
MAY EXAMINATIONS 2011

SUBJECT: SOFTWARE ENGINEERING CONCEPTS
CODE: SCS1205

INSTRUCTION TO CANDIDATES

Answer all questions from section A and any two (2) from section B.
The paper consists of six (6) questions and each question carries 25 marks.

Time: 3 hours

SECTION A

QUESTION ONE

- a) Define the following
- | | |
|-------------|-----|
| i. Software | [1] |
| ii. Program | [2] |
| iii. Code | [2] |
| iv. Bug | [2] |
| v. Model | [2] |
- b) Discuss the eight principles of Software Engineering code of ethics and professional practice. [16]

QUESTION TWO

- a) State the five attributes of Good Software? [5]
- b) You have been requested to develop software for a portable device that only sells bus tickets from town to campus. Suggest suitable user requirements, system requirements and also perform systems analysis and design using either a Function or Object oriented approach. [20]

SECTION B

QUESTION THREE

- a) Distinguish between upper CASE Tools and Lower CASE Tools. [4]
- b) State five considerations when designing a good user interface. [5]
- c) Draw a sequence diagram showing the actions performed in the Balance Enquiry use case of an ATM system. You may make any reasonable assumptions about the system. Pay particular attention to specifying user errors. [16]

QUESTION FOUR

- a) What are the reasons for performing Verification and Validation? [6]
- b) Using the technique of formal methods, where natural language is presented in a standard way, write possible user requirements for the spelling check and correcting function in a word processor. [5]
- c) Compare and Contrast the Spiral software process model with the Waterfall software process model. [14]

QUESTION FIVE

- a) Differentiate between functional and non-functional requirements. [4]
- b) Using a suitable example, describe a Context Model. [6]
- c) Design a Data Flow Diagram for borrowing a book in a Lending Library System. [15]

Question Six

- a) What should be included in a software project plan? [10]
- b) Discuss the principles of the COCOMO II model for algorithmic cost estimation. [15]

END OF QUESTION PAPER