COLLEGE OF ENGINEERING AND APPLIED SCIENCES

NCIS212: SOFTWARE ENGINEERING

END OF FIRST SEMESTER EXAMINATION

NOVEMBER 2023

LECTURER: MR. L. DHLAKAMA

TIME: 3 HOURS

INSTRUCTIONS

1. Answer ALL Questions from Section A.

2. Choose any **Two** (2) Questions from Section B

3. The marks given in brackets at the end of each question are indicative of the weight given to each part of the question.

4. This question paper consists of 3 printed pages

SECTION A (40 MARKS)

 Answer all questions from section A

Question One

(a)   Explain the meaning of the term 'software crisis'.   (5 marks).

(b)   Give **THREE** examples of ways in which software engineering practices can help to

alleviate problems associated with the 'software crisis'.   (15 marks)

Question Two

   a) What is a software process model?   (2 marks)

   b) Discuss the Waterfall model in software development. What are its advantages and

      disadvantages?   (10 marks)

   c) Evaluate its suitability for a particular project?   (8 marks)

SECTION B (60 MARKS)

 Answer any 2 questions from this Section

Question Three

   (a) Compare and contrast the Spiral model and the Iterative model in software development.

       What are the key differences between these two models, and how would you evaluate

       their effectiveness in managing project risks?   (10 marks)

   (b) Explain the Agile software development process and discuss how it addresses the

       limitations of traditional process models like Waterfall.   (10 marks)

   (c) **There is no universally "best" process model**. Critically analyze the above statement in

       the context of software engineering   (10 marks)

Question Three

(a) Describe the typical stages that a software product goes through from initial concept to its disposal. (8 marks)

(b) Describe any **FOUR** types of risk that might be identified in a software project checklist.

(12 marks)

(c) How you would you mitigate the risk in (b) above. (10 marks)

Question Four

(a) What is software design? (2 Marks)

(b) State and explain the rules to be applied in user interface design. (10 marks)

(c) Describe THREE software validation techniques that can be used to ensure customer requirements are being met. (8 marks

(d) Explain the difference between functional and non-functional requirements. (6 marks)

(e) Give at least 2 examples of functional and non-functional requirements (4 marks)

Question Five

(a) Describe the evolutionary prototyping model of a software development process and state the type of development project to which this is most suited. (10 marks)

(b) Explain TWO disadvantages in following an evolutionary prototyping model in a software development project. (10 marks)

(c) Discuss the reasons why substantial software systems often take longer to implement than planned and do not perform as well as expected. (10 marks)

End of Examination