



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

**SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN SOFTWARE ENGINEERING**

SSE 214: SOFTWARE CONSTRUCTIONS

DATE: TUESDAY 17TH APRIL 2012

TIME: 8.00 A.M. - 10.00 A.M.

INSTRUCTIONS

Answer Question One and any other Two Questions

Question One (30 marks)

- a) Define the following terms (6 marks)
 - i) Aggregation
 - ii) Compiler
 - iii) Lexeme
- b) What is a System? (4 marks)
- c) Two aspects used in System description are structure and behaviour. Using suitable examples describe each of them. (6 marks)
- d) Discuss the difference between the following
 - i) Functional and non-functional requirements (4 marks)
 - ii) User and system requirements (4 marks)
- e) The life time of a process can be divided into several stages as states, namely. (6 marks)

Question Two

- a) Define
 - i) Interprocess communication
 - ii) Synchronization (4 marks)

- b) Describe three techniques of handling concurrency (6 marks)
- c) Describe how the CPU is shared among several concurrent threads or programs in a computer (4 marks)
- d) Briefly describe what concurrency and inter-process communication involve. (6 marks)

Question Three

- a) The behaviour of one state machine is influenced by the behaviour of the other state machines. Describe four paradigms for modeling communication between several state machines (8 marks)
- b) Write short note on:
 - i) BNF (Backus Naur Form) (6 marks)
 - ii) Context free grammar (6 marks)

Question Four

- a) Outline the main difference between high level and low level design methods in software construction. (6 marks)
- b) Describe the programming constructs of:
 - i) sequence
 - ii) selection
 - iii) iteration (repetition) (9 marks)
- c) Define formal methods to requirement analysis. (1 mark)
- d) Explain 4 advantages of formal methods (4 marks)

Question five

- a) With the help of a diagram describe the compilation process, clearly describing the function of each part. (10 marks)
- b) What is the role of programming language grammar (4 marks)
- c) Using relevant examples differentiate between syntax and semantics (6 marks)