



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

SCO 301: COMPILER DESIGN CONSTRUCTIONS

DATE: 23/7/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS

Answer **question ONE** and any other **TWO** questions.

QUESTION ONE (30 MARKS)

- a) Difference between Compiler and Interpreter and explain how each works. (4 marks)
- b) Explain three features of compilers. (3 marks)
- c) Using a diagram differentiate three types of compiler. (6 marks)
- d) Explain three tasks of compiler. (3 marks)
- e) Using diagram discuss the steps for language processing systems. (4 marks)
- f) Explain two compiler construction tools. (2 marks)
- g) Explain why programmer needs to use a compiler. (2 marks)
- h) Explain three applications of compilers. (3 marks)
- i) Differentiate between the following: (3 marks)
 - i. Lexeme
 - ii. Token
 - iii. Pattern

QUESTION TWO (20 MARKS)

- a) Discuss using a diagram the Lexical Analyzer Architecture focusing on how tokens are recognized. (4 marks)

- b) Explain two roles of the Lexical analyzer. (2 marks)
- c) Explain three types of Lexical Errors. (3 marks)
- d) Explain three error recovery techniques in Lexical Analyzer. (3 marks)
- e) Differentiate between Lexical Analyzer and Parser. (3 marks)
- f) Explain two reasons why we separate Lexical and Parser. (2 marks)
- g) Explain two advantages and one disadvantage of Lexical analysis. (3 marks)

QUESTION THREE (20 MARKS)

- a) Why do you need Syntax Analyzer? (2 marks)
- b) Explain two important tasks perform by the parser. (2 marks)
- c) Explain the two groups of Parsing techniques. (4 marks)
- d) Explain three Common Errors that occur in Parsing. (3 marks)
- e) Discuss three common error-recovery methods which can be implemented in the parser. (6 marks)
- f) Differentiate between Syntax and Lexical Analyzer and explain one disadvantages of using Syntax Analyzers. (3 marks)

QUESTION FOUR (20 MARKS)

- a) Using a diagram discuss briefly the phases of compiler design. (8 marks)
- b) Explain the role of Semantics in Compiler Design explain two Semantic Errors of Compiler Design. (6 marks)
- c) Explain the Run-Time Environment of Compiler Design. (3 marks)
- d) Explain the role of the Symbol Table in Compiler Design. (3 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the role of intermediate code in Compiler Design and how the Intermediate Code is represented in Compiler Design. (7 marks)
- b) Discuss the role of Code Generation in Compiler Design and how the intermediate code is transformed into target object code or assembles code using examples. (7 marks)
- c) Discuss the role of Code Optimization in Compiler Design and differentiate types of code Optimization. (6 marks)