NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16, Ahmadu Bello Way, Victoria Island

SCHOOL OF SCIENCE AND TECHNOLOGY
October, 2013 Examination

Course Code: CIT 445
Course Title: Principles& Techniques of Compilers
Credit Unit: 3
Time: 2½ hours
Instruction: Answer any five (5) questions. Each question carries 14 marks

1.(a) Define the term parsing (3 marks)
(b) State and discuss four examples of analytic grammar formalisms (8 marks)
(c) Given the grammar *G* with the following production rules, S → a | aS | bS, determine whether the string ***babbaa*** can be generated by the grammar (3 marks)

2.(a) What is the difference between a translator and a compiler (6 marks)
(b) State and describe four components of the structure of a compiler (8 marks)

3.(a) With the aid of a diagram describe the functions of a T.diagram (8 marks)
(b) State the Roles of a Parser (6 marks)

4.(a) State four difficulties with Top-down parsing (6 marks)
(b) State five benefits of LR Parsing (7 marks)

5.With the aid of illustrative diagram describe the phases of a compiler (14 marks)

6.(a) State and describe the three main techniques for loop optimisation (6 marks)
(b) State any sixqualities of a compiler (8 marks)

7. Consider the grammar G below:

G: E → E + T / T
T → T * F / F
F → (E) / i

(a) Generate the non-left recursive version of the grammar (5 marks)
(b)Find FOLLOW of all the nonterminal symbols in the non-left recursive version of the grammar (9 marks)