

**B.TECH SEM – VIII (2007 COURSE) (COMPUTER ENGG.) :**  
**WINTER - 2017**

**SUBJECT: COMPILER CONSTRUCTION**

Day: **Monday**  
Date: **20/11/2017**

Time: **02.30 PM TO 05.30 PM**  
Max. Marks: **80**

**W-2017-2659**

**N.B.:**

- 1) Q. No.1 and Q. No.5 are **COMPULSORY**. Out of remaining questions attempt Any **TWO** questions from each section.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Answers to both the section should be written in the **SEPARATE** answer book.
- 4) Assume suitable data if necessary.
- 5) Draw neat and labeled diagrams **WHEREVER** necessary.

**SECTION-I**

- Q.1**
- a) Explain in detail compilation process with the help of diagram. **(06)**
  - b) Write the YACC specification for scientific calculator. **(04)**
  - c) What is the difference between syntax tree and parse tree? **(04)**
- Q.2**
- a) Explain the different types of compilers with example. **(07)**
  - b) Write down LEX specification file for a typical class definition in C++. **(06)**
- Q.3**
- a) Consider the following grammar: **(07)**  
 $S \rightarrow SAS|(S)| - S | id$   
 $A \rightarrow +|-|*$   
Is this grammar operator grammar? If yes justify. If no, then convert it to operator grammar.
  - b) Construct predictive parsing table for the following grammar: **(06)**  
 $S \rightarrow A$   
 $A \rightarrow aB|Ad$   
 $B \rightarrow bBC|f$   
 $C \rightarrow g$
- Q.4**
- a) Generate the three address code for the following program fragment: **(07)**  
while (A<C and B>D) do  
if A = 1 then C = C+1  
else  
while A <=D do  
A = A+3
  - b) Explain Synthesized attributes, Inherited attributes and L – attributed Definitions. **(06)**

**SECTION-II**

- Q.5**
- a) Discuss the various approaches to symbol table organization. **(06)**
  - b) Explain machine dependent optimization. **(04)**
  - c) Explain peephole optimization with example. **(04)**
- Q.6**
- a) How does the heap allocation strategy is used for runtime storage allocation? **(07)**
  - b) What are the typical contents of activation record? Explain how to access the contents of the activation record. **(06)**
- Q.7**
- a) Explain the different transformations on basic block with example. **(07)**
  - b) Explain the following terms in the context of code optimization (give example for support): **(06)**
    - i) Reaching definitions
    - ii) Available expressions
- Q.8**
- a) Explain Code generator- generator concept with suitable example. **(07)**
  - b) Write short notes on code generation issues. **(06)**

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