

6. Explain the working methodology of canonical LR parser with an example.
7. (a) What are meant by S-attribute definition and L-attribute definition? Explain with examples.
- (b) Define '3-address code' and 'quadruples'. Give the 3-address code and quadruples for the statement $a = -b * d + c + (-b) * d$.
8. What are various code optimization techniques? Briefly discuss about them with examples.
9. (a) Define 'basic blocks'. What are the operations that can be performed on the basic blocks? akubihar.com
- (b) Define DAG. Discuss how basic blocks can be represented as DAG.

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**B.Tech 6th Semester Exam., 2014
(Special)**

COMPILER DESIGN

Time : 3 hours

Full Marks : 70

Instructions :

- (i) All questions carry equal marks. akubihar.com
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Answer the following as directed (any seven) :

- (a) Define 'compiler'. akubihar.com
- (b) What operations can be performed on a language?
- (c) What is the difference between l-value and r-value? akubihar.com
- (d) The output of a lexical analyzer is
- (i) a machine code
- (ii) an intermediate code
- (iii) a stream of tokens
- (iv) a parse tree

(Choose the correct option)

(e) In an absolute loading scheme, which loader function is accomplished by assembler?

- (i) Reallocation
- (ii) Allocation
- (iii) Linking
- (iv) Loading

(Choose the correct option)

(f) Intermediate code generation phase gets input from

- (i) lexical analyzer
- (ii) syntax analyzer
- (iii) semantic analyzer
- (iv) code optimizer

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(Choose the correct option)

(g) YACC builds up

- (i) CLR parsing table
- (ii) SLR parsing table
- (iii) LALR parsing table
- (iv) None of the above

(Choose the correct option)

(h) Which of the following does not interrupt a running process?

- (i) Device
- (ii) Scheduler
- (iii) Timer
- (iv) Power failure

(Choose the correct option)

(i) Grammar of the programming is checked at — phase of compiler.

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(j) A compiler for a high-level language that runs on one machine and produce code for different machines is called

- (i) optimizing compiler
- (ii) one-pass compiler
- (iii) cross-compiler
- (iv) multipass compiler

(Choose the correct option)

2. Describe how various phases could be clubbed as a pass in a compiler. akubihar.com

3. What is operator precedence grammar? Give its algorithm.

4. Give an algorithm for constructing simple LR parsing table. Explain with an example.

5. Define FIRST and FOLLOW. Illustrate the steps to find the FIRST and FOLLOW of the following grammar :

$$E \rightarrow TE'$$

$$E' \rightarrow +TE' \mid e$$

$$T \rightarrow FT'$$

$$T' \rightarrow *FT' \mid e$$

$$F \rightarrow (E) \mid id.$$

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