BCA(III) / 22A / 15

2015

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

(Objective-type Questions)

Answer all questions.

1. Choose the correct answer of the following :

    $2 \times 10 = 20$

   (a) In a two pass-assembler, adding literal table and address resolution of local symbol are done using :

   (i) First pass and second pass respectively

   (ii) Both second pass

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8. (a) Compare display implementation with static chain pointer implementation.

   (b) Compare call by value result and call by reference parameter passing mechanisms. Can they produce different results ? When ?

9. (a) What is meant by reducible flow graph ? Explain with suitable examples.

   (b) Define the meaning of terms line variable and available expression, with suitable examples. Which of them is a forward flow problem and which is a backward flow problem ?

10. Generate code for the following basic block using gencode algorithm :

    t 1 = b + c

    t 2 = d* e

    t 3 = t 2* t 1

    X = t 3* f

    Assuming that two registers are available.

 ———— ❖ ————

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(iii) Second pass and first respectively

(iv) Both first pass

(b) In two pass assembler, the object code generation is done during the :

(i) Second pass

(ii) First pass

(iii) Zeroth pass

(iv) Not done by assembler

(c) Pick the machine independent phase of the compiler :

(i) Syntax analysis

(ii) Code generation

(iii) Lexical analysis

(iv) Intermediate code generation

(d) A system program that combines the separately compiled modules of a program into a form suitable for execution :

(i) Assembler

(ii) Linking loader

(iii) Cross compiler

(iv) Load and go

(v) None of above

(e) Which of the following type of software should be used if you need to create, edit and print document ?

(i) Word processing

(ii) Spread sheet

(iii) Desktop Publishing

(iv) UNIX

(v) None of the above

(f) Output file of the Lex is _____ the input file in myfile :

(i) Myfile . e

(ii) Myfile . yy . c

(iii) Myfile . lex

(iv) Myfile . obj

(v) None of the above

(g) Type checking is normally done during :

(i) Lexical analysis

(ii) Syntax analysis

(iii) Syntax directed translation

(iv) Code generation

(h) Yacc is available as a command on the ?

(i) MINIX

(ii) UNIX

(iii) DOS

(iv) None of the above

(i) Loading process can be divided into two separate programs, to solve some problem. The first is binder the other is :

(i) Linkage Editor

(ii) Module Loader

(iii) Relocater

(iv) None of these

(j) In Lex, a class is complemented by first placing —— ;

(i) ∧

(ii) OR

(iii) —

(iv) NOT

Group – B

(Long-answer type Questions)

Answer any **four** questions of the following :

15×4 = 60

2. (a) What is the differences between a compiler and an interpreter ?

(b) "Code optimization is an optional phase of compilation process." Comment.

3. (a) Consider the following program :

```
main ( )
{
    int X, Y, Z ;
    Z = X + Y ;
}
```

List down the lexemes, tokens and the attributes of the token, at the end of the lexical analysis of the above program.

(b) Construct a minimal state DFA for the following regular expression :

(a | b)* | (ab)* b | a* (bb)*

4. (a) Eliminate all ∈-production from the following grammer :

S → aAB | dA

A → bAc | ∈

B → dB | ∈

(b) Consider the following grammar :

S → AB

A → a Ab | ab

B → Bc | c

Write the leftmost as well as rightmost derivation sequence for the string aabbcc.

5. (a) Construct LL(1) parse table for the following grammer :

S → aAC | bB

A → ℓD

D → bE | ∈

E → ℓD | dD

B → f | g

C → h | i

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(b) "Every unambiguous grammar is LL(1)". Comment on the true / false hood of the statement.

(c) Obtain regular grammar equivalent to the regular expressions given below :

(i) a* (a | b)b b

(i) (ab)* ba(ab)*

6. (a) Explain the meaning of the following terms by giving suitable examples :

(i) Handle

(ii) Viable prefix

(b) Consider the following grammar :

S → a A b

A → A a | ∈

Construct CLR (1) / LR(1) parsing table for the above grammar.

7. (a) Explain why every S-attributed difinition is L-attributed.

(b) Discuss the advantages and disadvantage of short circuit evaluation of Boolean expression with suitable examples.

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