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M.Sc. 2nd Semester Examination

Computer Science

PAPER : COS–202

(Compiler Design)

Full Marks : 20

Time : 3 hours

The figures in the right-hand margin indicate marks.

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

Illustrate the answers wherever necessary.

Answer from **all** the Groups as directed.

GROUP—A

Answer *any* **two** questions :   2×2=4

1. What do you mean by reduce-reduce conflict?

2. Define annotated parse tree.

3. State the problems in top town parsing.

4. Differentiate among tokens, patterns and lexeme.

(2)

GROUP—B

Answer *any* **two** questions :   4×2=8

5. *(a)* Consider the following grammar :

    A → ABd|Aa|a

    B → Be|Bb|c

    Remove left recursion.   2

(b) Remove left factoring from the following grammar :   2

    A → aAB|aA|a|b

    B → bB|bA|c

6. Calculate FIRST and FOLLOW for the following grammar :   4

    S → aBDh

    B → cC

    C → bC|

    D → EF

    E → g|

    F → f|

7. Consider the following grammar :

    S → AB|eDa

    A → ab|c

    B → dC

    C → eC|

    D → fD|

Construct SLR parsing table.   4

(3)

8. *(a)* Draw the AST and DAG for the following expression :   2
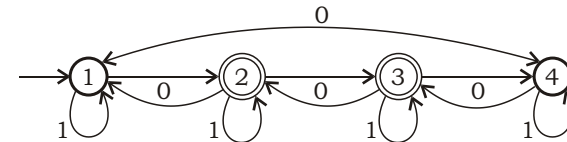
    "if x → 0 then x → 3 (y → 1) else y → y → 1"

(b) Write quadruples, triples and indirect triples for the expression :   2

    (a → b) → (c → d) → (a → b → c → d)

GROUP—C

Answer *any* **one** question :   8

9. Convert the following NFA with → to DFA using the →-closure method :   8

10. *(a)* Write the differences among SLR, CLR, LALR parsers.   2

(b) Construct CLR parsing table for the given grammar :

    S → AA

    A → aA|b

and parse the sentence "abdef".   4+2=6

[Internal Assessment : 5]

★ ★ ★