Paper ID [B0125]

(Please fill this Paper ID in OMR Sheet)

MCA (Sem. - 5th)

COMPILER DESIGN (MCA - 503-B)

(Elective - II)

Time : 03 Hours   Maximum Marks : 60

Instruction to Candidates:

1)   Attempt any One question from each Sections - **A, B, C & D**.

2)   Section - E is **Compulsory**.

Section - A

(1 x 10 = 10)

Q1) Show diagrammatically 'the structure of a compiler'. Explain the various phases of a compiler.

Q2) What is a transition diagram? Draw a transition diagram to identify the keywords IF, THEN, ELSE, DO WHILE, BEGIN, END, ENDIF.

Section - B

(1 x 10 = 10)

Q3) Construct the parse tree for the sentence :- not (true or false) by applying both top-down and bottom-up parsing (showing their implementation details). Grammar is as follows :-

bexpr $\rightarrow$	bexpr or bterm | bterm
bterm $\rightarrow$	bterm and bfactor | bfactor
bfactor $\rightarrow$	not bfactor | (bexpr) | true | false

Q4) Define LR grammar. Discuss canonical LR parsing tables and LALR parsing tables.

Section - C

(1 x 10 = 10)

Q5) Discuss the effect of applying grammar transformation on the semantic actions of that grammar. Give suitable examples.

Q6) Write quadruples, triples and indirect triples for the expression :-

- ((A/B) + B) * (C + (D * E)) - (A + B + C)

Section - D

(1 x 10 = 10)

Q7) What is the importance of loop optimization? Discuss peephole optimization in detail along with suitable examples.

Q8) What do you understand by code-generator generators? Explain in detail the various problems in code generation.

Section - E

(10 x 2 = 20)

Q9) a) What is the difference between phase and pass?

b) List various compiler tools.

c) What is a synthesized attribute?

d) Give a regular expression for real numbers.

e) What is recursive descent parsing?

f) What is a flow graph?

g) What is the importance of operator precedence?

h) What is the need of implicit type conversion?

i) What are S-attributed definitions?

j) What are syntax trees?

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