Total No. of Questions : 5]

SEAT No. :

P6403

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[6155]-66
T.Y. B.Sc. (Computer Science)
CS - 366 : COMPILER CONSTRUCTION
(2019 Pattern) (Semester - VI)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any Eight of the following (out of 10). **[8×1=8]**

a) Define cross compiler.

b) List the two classes of SDD.

c) Define the term dead code.

d) List the differnt types of conflicts that occur in LR parser.

e) State one difference between annotated Parse tree and dependency graph.

f) List the techniques used in code optimization.

g) What is the purpose of augmenting the grammar?

h) Define term Attribute Grammar.

i) What is output of Lexical Analysis?

j) State True or False : Shift - Shift conflict does not occur in LR Parser.

Q2) Attempt any four of the following (out of 5): **[4×2=8]**

a) Compute First and Follow for the following

$S \rightarrow i\ CtSS' | a$

$S' \rightarrow e\ S | \in$

$C \rightarrow b$

P.T.O.

b) Write difference between LL parser and LR Parser.

c) Compute Leading and Trailing symbols of the following Grammar:

$S \rightarrow (T) \mid a \mid \wedge$

$T \rightarrow T, S \mid \$$

d) Write execution steps of VACC program.

e) Give two difference between synthesized and inherited attributes.

Q3) Attempt any Two of the following (out of 3) **[2×4=8]**

a) Write a Recursive Descent Parser (RDP) for the following grammar.

$E \rightarrow E+T \mid T$

$T \rightarrow T * F \mid F$

$F \rightarrow (E) \mid id$

b) Construct DAG for following expression.

i) $b*(a+c)+(a+c)*d$

ii) $y+(y+x)/(x-z)*(x-z)$

c) Check whether the following Grammar is LL(1) or not?

$S \rightarrow a \mid \wedge \mid (R)$

$T \rightarrow S, T \mid S$

$R \rightarrow T$

Q4) Attempt any two of the following (out of 3) **[2×4=8]**

a) Check whether the given grammar is SLR (1) or not.

$S \rightarrow A \mid B$

$A \rightarrow aA \mid b$

$B \rightarrow dB / b$

b) Construct triples and Quadruples for the following expression :

(a+b)*(m–n) ↑ (m+n)

c) Consider the following SDD and construct Annotated Parse tree for input string $3*5*2$

Production	Semantic Rules
$E \rightarrow TE'$	$E'.inh = T.val$ $E.val = E'.syn$
$E' \rightarrow +TE'$	$E'_1.inh = E'.inh+T.val$ $E'_1.syn = E'_1.syn$
$E' \rightarrow \in$	$E'.syn = E'.inh$
$T \rightarrow FT'$	$T'.inh = F.val$ $T.val = T'.syn$
$T' \rightarrow *FT'$	$T'_1.inh = T'.inh * F.val$ $T'_1.syn = T'_1.syn$
$T^1 \rightarrow \in$	$T'.syn = T'.inh$
$F \rightarrow digit$	F.val = digit.lexval

Q5) Attempt any one of the following (out of 2). **[1×3=3]**

a) Write a LEX program to find factorial of a given number.

b) Eliminate left-Recursion from following grammar:

$S \rightarrow Aa \mid b$

$A \rightarrow Ac \mid sd \mid \in$