cs 6 sem system programming and compiler construction dec 2015

[Max Marks 80

(3 Hours)

N.B.
(1) Question no. 1 is compulsory.
(2) Attempt any 3 from the remaining questions.
(3) Assume suitable data if necessary.
(4) Figures to right indicate full marks.

Q1(a) Differentiate between Application program and system program. 5
Indicate the order in which following system programs are used, from developing program upto its execution.
Assemblers , Loaders , Linker , Macro processor , compiler , Editor

Q1(b) Elliminate Left recursion in the following grammar (Remove Direct 5
and Indirect recursion)
$S \rightarrow Aa \mid b \qquad A \rightarrow Ac \mid Sd \mid \varepsilon$

Q1(c) What is an activation record? Draw diagram of General Activation 5
record and explain the purpose of different fields of an activation record

Q1(d) What are the different functions of loader. 5

Q2(a) For a given grammar below , construct an operator precedence relation 10
matrix , assuming * , + are binary operators and *id* as terminal Symbol
and E as non-terminal.
$E \rightarrow E + E \qquad E \rightarrow E * E \qquad E \rightarrow id$
Apply operator precedence parsing algorithm for the statement
id + id * id

Q2(b) Explain the role of code optimization in compiler designing ? Explain 10
Peephole optimization along with an example.

Q3(a) Write a note on JAVA compiler environment. 5

Q3(b) Write a brief note on Design of an Editor. 5

Q3(c) Explain synthesized and Inherited attributes used in Syntax Directed 5
Definition.

Q3(d) Find FIRST and FOLLOW Set for given grammar below 5
$E \rightarrow T E' \qquad E' \rightarrow + T E' \mid \varepsilon$
$T \rightarrow F T' \qquad T' \rightarrow * F T' \mid \varepsilon$
$F \rightarrow (E) \qquad F \rightarrow id$

Q4(a) Explain Design of Dynamic Linking Loader along with example 10

Q4(b) For the following grammar construct LL(1) parser table 10
$S \rightarrow F \qquad S \rightarrow (S - F) \qquad F \rightarrow a$
And Parse the string (a − a) . Show contents of stack and i/p buffer
and action taken after each step.

Q5(a) Explain different pseudo-ops used for conditional macro expansion 10
along with an example

Q5(b) What are the different phases of Compiler ? Illustrate compilers internal 10
representation of source program for following statement after each phase
Position := initial + rate * 60

Q6(a) With reference to Assembler explain following tables with suitable 10
example . (i) POT , (ii) MOT (iii) ST (iv) LT

Q6(b) Explain Backpatching with an example. 10

MD-Con. 7329-15.