14CS602

Hall Ticket Number:

III/IV B.Tech (Regular / Supplementary-Repeat Exam) DEGREE EXAMINATION

January, 2021 — **Computer Science & Engineering**

Sixth Semester — **Compiler Design**

Time: Three Hours — **Maximum:** 60 Marks

*Answer **All** Questions from **Part- A.*** (1X12 = 12 Marks)

*Answer **ANY FOUR** Questions from **Part – B.*** (4X12 = 48 Marks)

Part -A

1. Answer all questions (1X12=12 Marks)
   a) Define phase.
   b) Define compiler.
   c) What is the role of the lexical analyser?
   d) Define DAG?
   e) Define synthesized attribute?
   f) Define annotated parse tree?
   g) List out parameter passing techniques.
   h) What is an activation record.
   i) Define symbol table.
   j) What is the instruction cost of the instruction ADD $*R_0$, $4(R_1)$.
   k) What is basic block?
   l) What is backbatching?

Part - B

1. a) Explain different phases of the compiler with an example . 6M

b) Explain input buffering. 6M

2. a) Find out FIRST AND FOLLOW sets for each nonterminal of the following grammar?

$P \rightarrow AQRbe \mid mn \mid Dei$
$A \rightarrow ab \mid \epsilon$
$Q \rightarrow q_1q_2 \mid \epsilon$
$R \rightarrow r_1r_2 \mid \epsilon$
$D \rightarrow d$
$E \rightarrow e$ 6M

b) Construct predictive parsing table for the following grammar and check whether the grammar is LL(1).

$S \rightarrow L=R \mid R$
$L \rightarrow *R \mid ID$
$R \rightarrow L$ 6M

3. Construct LR(0) item sets for the following grammar and then construct SLR parsing table. 12M

$E \rightarrow E+T \mid T$
$T \rightarrow T*F \mid F$
$F \rightarrow (E) \mid ID$

4. Construct CLR parsing table for the following grammar? 12M

$S \rightarrow aTRe$
$T \rightarrow Tbc \mid b$
$R \rightarrow d$

5. a) Explain different data structures to implement symbol table. 8M

b) Explain fields of the activation record. 4M

P.T.O.

6. a) Explain different storage allocation strategies in detail. 12M

7. a) Explain different intermediate languages. 6M
   b) Give SDT scheme for Boolean expressions using back patching. Generate three address statements for (a < b) && (c < d) || (e < f). 6M

8. a) Explain code generation algorithm. 6M
   b) Generate code for the following by using above algorithm. 6M

   t=a-b u=a-c v=t+u d=u+v