United College of Engineering & Research,Allahabad

First Sessional (2016-17)

Compiler Design(ECS-603)

CS/IT 6th Semester

Time : 120 Min. MM. 30

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[Section –A] **[Attempt all part]** **[1X10=10]**

1. What is cross compiler?
2. Differentiate between Compiler and Interpreter?
3. Explain the term bootstrapping with example.
4. Draw the transition diagram for relational operator?
5. Find the no of Lexeme in given code fragment

```
int  x,y;
int min(x ,y)
{
return(x<y? x : y);
}
```

6. Write a lex program to identify keyword and convert it into upper case letter.
7. Discuss the merit and demerit of single pass compiler and multi-pass compiler?
8. Differentiate between linker and loader?
9. Describe the language denoted by the following regular expression: $(1+0)^*$
10. Discuss the utility of Macros.

[Section –B] **[Attempt any three part]** **[4X3=12]**

1. (i)Remove left recursion from the grammar

```
E ->E(T)/T
T->T(F)/F
F->id
```

   (ii)Apply the left factoring in the following grammar.

```
S->bSSaaS  /  bSSaSb  /  bSb / a
```

2. Construct minimum state DFA for the following regular expression:

   (ab|b)* a (a|b)
3. Construct a minimal DFA which accept set of all strings over {a,b} in which every 'a' should be followed by 'bb'
4. Discuss input buffering and preliminary scanning in lexical analysis.
5. What is mean by ambiguous grammar? How ambiguity is avoided? Explain with suitable example

[Section –C] **[Attempt any One part]** **[8X1=8]**

1. Differentiate between Recursive Descent Parsing and Predictive Parsing. Derive the LL(1) parsing table for the following grammar

   Bexpr -> Bexpr **or** Bterm | Bterm
   Bterm-> Bterm **and** Bfactor | Bfactor
   Bfactor-> **not** Bfactor|**(**Bexpr**)** | **true** | **false**
2. What do you mean by operator precedence grammar? Compute the operator precedence table and precedence function table for the given grammar

   E-> E + T | T
   T-> T*F |F
   F-> (E) | id

   Parse the string **id+id*id** by the operator precedence parsing techiniques.
3. Explain the phases of the compiler in detail. Write down the output of each phase for the expression a=b*c + 50.