Indian Institute of Information Technology Allahabad
Mid Semester Examination (Feb. 2018)
Sixth Semester B.Tech. (IT)

Course Name	Course Code	Date of Exam	MM	Time
Compiler Design (S. Venkatesan/Triloki Pant)	ICOD632C	22.02.2018	30	2 Hrs

Note: Q. 1 and 2 possess binary marking.

1. Construct LR(0) automaton for following grammar: **[5 Marks]**

   $X \rightarrow YZ | a$
   $Y \rightarrow bZ | c$
   $Z \rightarrow c$

   Is above grammar LR(0)? If not, give the reasons. **[2 Marks]**

2. Generate LL(1) parse table for declarative statement represented by following grammar: **[5 Marks]**

   $Decst \rightarrow Type\ id\ Opid;$
   $Opid \rightarrow Opid, id | \varepsilon$
   $Type \rightarrow int | real$

3. Why is LR parser preferred over LL parser? **[3 Marks]**

4. Show the symbol table entries for the variables in the following program: **[5 Marks]**

```c
#include <stdio.h>
int a,b;
int main()
{
    int a;
    scanf("%d",&a);
    printf(%d", func (a));
    return 0;
}
int func (int c)
{
    int a = 10;
    return (a+c);
}
```

5. Write the algorithm for Lookahead code with sentinels used for Lexical Analyzer and explain through an example. **[5 Marks]**

6. What is proper CFG? Why CFG is preferred for programming languages? **[3+2 Marks]**

(End of the Paper)