**Max Time: 1 hours**                                                          **Max Marks: 30**

### Important instructions:

1. Exam is of exactly 1 hours. Students are requested to complete it within 1 hour. Extra 15 minutes are given to scan and upload the pdf file. Exam ends at 1:00 PM (IST)and scanned pdf of all the answers must be submitted by 1:15 PM (IST).

2. Please note that any answer-sheet submitted after 1:15 PM might not be considered for evaluation and you will be given zero marks in that case.

3. **Scanned answer-sheet has to be mailed at- compiler.2021.csn352@gmail.com**

4. Write your Name and Roll number on the first page of answer sheet and number all pages.

5. If any data is missing, make suitable assumptions and state them clearly.

1. **Question:[Total: 4 marks]**
   Design DFA corresponding to the given RE using the direct method {Hint: use firstpos() and followpos() }
   **Regular Expression (RE):** $(a|b)^*ab^*$

2. **Question: [Total: 4 marks]**
   Define Following:
   (a) Tokens        [**1 mark**]
   (b) Patterns      [**1 mark**]
   (c) Lexemes       [**1 mark**]
   (d) Sentences      [**1 mark**]

3. **Question:[Total:1 marks]**
   Enumerate no of valid tokens in the following code:
   int main()
   {
   // 2 variables
   int a, b,c,d;
   a = 10;
   return 0;
   }

4. **Question:[5 marks]**
   Construct an LL(1) parsing table for the following grammar:
   $S \rightarrow aBDh$
   $B \rightarrow cC$
   $C \rightarrow bC \mid \epsilon$
   $D \rightarrow EF$
   $E \rightarrow g \mid \epsilon$
   $F \rightarrow f \mid \epsilon$

5. **Question:[5 marks]**

   Construct an SLR(1) parsing table for the following grammar:

   $S \rightarrow xAy \mid xBy \mid xAz$
   $A \rightarrow aS \mid q$
   $B \rightarrow q$

6. **Question:[5+3 marks]**

   Construct an LALR parsing table for the following grammar:

   $S \rightarrow aBAc$
   $B \rightarrow Bbe \mid D$
   $A \rightarrow AeD \mid D$
   $D \rightarrow S \mid d$

7. **Question:[3 marks]**

   Discuss any two panic mode error recovery strategies used in predictive parsing.

   something called synchroinizing sets present => first (A), follow (A), some special
   terminals like semicolon, or keywords like for while...etc.