Thapar Institute of Engineering & Technology
Computer Science and Engineering Department
**Compiler Construction (UCS-802)**
Date: March 07, 2022

Timing: 5:30 PM        Session: 2021-22, VII Semester (Auxiliary)        Max mark: 50

### Attempt any five questions

1. (a) Diagrammatically represent different phases of compiler. **(8)**

   (b) Explain cross compiler with the help of suitable example. **(2)**

2. (a) Explain garbage collection. **(2)**

   (b) Discuss four code optimization techniques. **(8)**

3. Consider the language: L={$w|w$ is a string of $a's$ and $b's$ containing at-least one $ab$ and ending with even number of $b's$}

   (a) Give the regular expression for the language given above. **(1)**

   (b) Using the syntax tree method, draw the annotated syntax tree. Find the *first-pos, lastpos, followpos*. **(2+3)**

   (c) Generate the DFA using syntax tree method **(4)**

4. (a) Construct a LL(1) parsing table for the grammar:
      $S \rightarrow aCDe$
      $C \rightarrow Cbc$
      $C \rightarrow b$
      $D \rightarrow d$ **(6)**

   (b) Show whether the following string will be accepted or not:
      $abbcbcde$ **(4)**

5. (a) Perform left factoring for this grammar:
      $E \rightarrow E + T|T$
      $T \rightarrow T * F|F$
      Find the FIRST and FOLLOW set for the resulting grammar after left factoring. **(2+4)**

(b) Explain triple z quadruple with examples? (4)

6. (a) Give the rules for generating FIRST and FOLLOW set with examples. (5)

(b) Compare and contrast L-attribute and S-attributes grammar? (5)

7. Write a short note on:

(a) Activation record (5)

(b) Dynamic memory management. (5)

## Best wishes