# Nirma University

## Institute of Technology
### Semester End Examination (IR), February - 2022
### B. Tech. in Computer Engineering / Information Technology, Semester-VII
### IT794 Compiler Construction

Roll No. [                    ]     Supervisor's initial with date: [                    ]

Time: 2 hours                                                    Max. Marks: 50

**Instructions: 1. Attempt all questions.**
**2. Figures to right indicate full marks.**
**3. Draw neat sketches wherever necessary.**
**4. Assume suitable data wherever necessary and clearly indicate it.**

| | | |
|---|---|---|
| **Q-1.** | **Do as directed.** | **[15]** |
| **A**<br>CO-1 | Show translation of a statement through different compiler phases.<br>Statement: a = b+c *14.0 | [05] |
| **B**<br>CO-1 | Write regular expression for following languages.<br>  i.  All strings of letter that contain the five vowels in order.<br>  ii. All strings of 0's and 1's that do not contain the substring 011.<br>  iii. All strings of digits with no repeated digit. | [05] |
| **C**<br>CO-1 | Differentiate between compiler pass and phase. Discuss single pass compiler and multi pass compiler. | [05] |

**OR**

| | | |
|---|---|---|
| **C**<br>CO-1 | Discuss Error recovery strategies for top-down parsing. | [05] |
| **Q-2.** | **Answer the following.** | **[20]** |
| **A**<br>CO-2 | Check whether the following grammar is LL(1) grammar or not.<br>$P \rightarrow P + Q \mid Q$<br>$Q \rightarrow Q *R \mid R$<br>$R \rightarrow ( P ) \mid id$ | [06] |
| **B**<br>CO-2 | Check whether the following grammar is LR(1) or not.<br>$S \rightarrow CC$<br>$C \rightarrow cC \mid d$ | [07] |
| **C**<br>CO-2 | Construct Syntax directed definition for following grammar.<br>$D \rightarrow TL$<br>$T \rightarrow int \mid real$<br>$L \rightarrow L_1,id \mid id$ | [07] |

**Q-3.** **Answer the following.** [15]

**A**
CO-3
Discuss specification of simple type checker with example. [05]

**OR**

**A**
CO-3
Explain Symbol table management and its organization. [05]

**B**
CO-3
Discuss stack memory allocation with example. [05]

**C**
CO-3
Draw quadruple and triple representation for following statement. [05]
A = (b-c) * (b+c)

**OR**

**C**
CO-3
Discuss different code optimization techniques in detail. [05]