Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Re Examination

January 2020

Max. Marks: 60 **Duration: 3 Hrs.**

Class: TE **Semester:VI**

Course Code: CE61 **Branch: Computer**

Name of the Course: System Programming and Compiler Construction

Instructions:

(1) All questions are compulsory

(2) Assume suitable data if necessary

(3) Draw neat diagram wherever required.

Q. No.		Max. Marks	CO-BL-PI
Q.1 A	Draw and explain analysis and synthesis model of a compiler.	6	1-2-1.1.1
Q.1 B	Define assembler directives. Explain with example following assembler directives used in SIC. a) START b) BYTE c) WORD d) RESB e) RESW	6	2-2-1.1.1
Q.2 A	Check whether the below given grammar is LL(1) or not by constructing LL(1) parsing table. $X \rightarrow (Y)\|num$ $Y \rightarrow YXZ\|y$ $Z \rightarrow +XZ\|\epsilon$ where X, Y and Z are non terminals, X is a start symbol and (,), num, y and + are terminals. **OR** Construct LR(0) parsing table for the below given grammar which expresses naming conventions of identifiers $I \rightarrow LD$ $D \rightarrow LD\|DL\|d\|\epsilon$ $L \rightarrow c\|\epsilon$ where I, D, L are non-terminals, I is a start symbol, d, c are terminals. Also draw DFA of LR(0) items.	8	3-3-3.2.2
Q.2 B	Describe with the help of a small program. the structure of a lex program.	4	3-2-1.1.1
Q.3 A	Explain data structures involved in SIC/XE macroprocessor. **OR** Explain how unique labels are generated during macro expansions.	6	2-2-1.1.1
Q.3 B	Generate quadruples and triples for the statement $a = b*-c+b*-c$ where $-$ is the unary operator.	6	4-3-2.2.3
Q.4 A	What is a linker? What are the basic loader functions? Explain	4	1-2-1.1.1

Q.4 B	Explain with example synthesized and inherited attributes used in Syntax Directed Definition.	8	3-2-1.1.1
Q.5 A	Explain heap storage allocation. **OR** Explain stack storage allocation.	8	5-2-1.1.1
Q.5 B	Explain following methods of code optimisation: i) Common-sub expression elimination ii) Copy propagation	4	4-2-1.1.1