**Code No:20CS3601**

**PVP20**

**P.V.P Siddhartha Institute OF TECHNOLOGY**

**(Autonomous)**

**Compiler Design**

**Duration: 3 Hours Max. Marks: 70**

Note:

1. Contains 5 essay questions with an internal choice. Each question carries 14 Marks.
2. All parts of Question paper must be answered in one place.

5 x 14 = 70 Marks

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|  |  |  | Blooms Level | CO | Max. Marks |
| **UNIT-I** | | | | | |
| 1 | (a) | Show the output for each phase of compilation for the input statement “x = y+ z\* 7” | L2 | CO1 | 10 |
| (b) | Describe the Structure of LEX program | L2 | CO1 | 4 |
| **OR** | | | | | |
| 2 | (a) | Explain the diagrammatic representation of a language processing system. | L2 | CO1 | 7 |
| (b) | Illustrate Input Buffering in detail | L2 | CO1 | 7 |
| **UNIT-II** | | | | | |
| 3 | (a) | Construct FIRST and FOLLOW for the given grammar  S’ ->S#  S -> LB  B -> ;S;L / =L  L -> (EJ  J ->,EJ / )  E -> L / a | L3 | CO2 | 7 |
| (b) | Explain error-recovery techniques in predictive parsing. | L2 | CO2 | 7 |
| **OR** | | | | | |
| 4 | Examine whether the given grammar is LL(1)or not and check whether the string “ba” is parsed or not.  S ->AaAb / BbBa  A -> ε  B -> ε | | L4 | CO5 | 14 |
| **UNIT-III** | | | | | |
| 5 | (a) | Explain the various actions performed by shift-reduce parsers with an example. | L2 | CO3 | 4 |
| (b) | Construct SLR parsing table for the following grammar  S→abS|AAab|b  A→baAb|b | L3 | CO3 | 10 |
| **OR** | | | | | |
| 6 | (a) | What is a handle? Explain the method of handle pruning with an example. | L2 | CO3 | 4 |
| (b) | Construct LR(0) items for the following grammar:  S→L=R | R  L→\*R | id  R→L | L3 | CO3 | 10 |
| **UNIT-IV** | | | | | |
| 7 | (a) | Construct CLR parsing table for the given grammar  N ->V=E / E  E -> V  V ->\*E / x | L3 | CO3 | 7 |
| (b) | Define Activation record. Explain with example, the elements of activation record. | L2 | CO4 | 7 |
| **OR** | | | | | |
| 8 | (a) | Differentiate CLR and LALR parsing techniques. | L4 | CO5 | 7 |
| (b) | Identify quadruple, triple and indirect triple for the expression - (a+b)\*(c+d) + (a+b+c). | L3 | CO4 | 7 |
| **UNIT-V** | | | | | |
| 9 | (a) | What is DAG? Construct the DAG for the following basic block  D: = B+C  E: =A+B  B: = B+C  A: = E-D | L3 | CO4 | 7 |
| (b) | Identify the primary structure preserving transformations on Basic Blocks. | L3 | CO4 | 7 |
| **OR** | | | | | |
| 10 | (a) | Explain the following with suitable examples.   1. Constant Propagation 2. Strength Reduction 3. Code Motion. | L3 | CO4 | 7 |
| (b) | Demonstrate peephole optimization technique with an example | L2 | CO4 | 7 |

Course Coordinators Head of the Department